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CELL-ANTAGONISM.

OBVIOUSLY, force and matter "make up" the universe. Force implies antagonism, antagonism perpetuates motion. The living cell is the embodiment of nature. Cell-antagonism is life. Multicellular organisms represent a community of vital unities. A model organism in equilibrium is health. Cell struggle is the gist of modern pathology. Every organ and every element is vulnerable. The strength of resistance in elements and organs, reinforced by the harmony and precision of coördination, and the vigor of counter agencies are the momentous questions.

In seeking for a comprehensive title for our address, we fell upon the the two simple words "cell antagonism," which form the foundation of symptomatology and pathology, conjoined with cell changes, the basis of pathological anatomy, embracing at once the universe of life and all the possibilities of life; disease being but one of the multitudinous phases of life.

Prof. Huxley has likened the body to an army. "Of this army, each cell is a soldier; an organ, a brigade; the central nervous system, headquarters and field telegraph; the alimentary and circulatory system, the commissariat. Losses are made good by recruits born in the camp, and the life of the individual is a campaign, conducted successfully for a number of years, but with certain defeat in the long run."

A model organism assumes that every soldier is a stalwart; every organ, a body of stalwarts with corresponding machinery of coördination and precision, all alike concerted and vigorous to meet the myriads of counter forces, many of which are too cunning for our ken, but ever ready to take advantage of the least failure of our strength, to penetrate our vitals. This force of vital resistance forms the basis of therapeutics; this "vis medicatrix naturæ" will always be the indispensable auxiliary of the physician, without which early abandonment of the art would be inevitable.

The morphologist distinguishes two classes of elements within the organism. One class represents the fixed cells, cells which occupy the fortifications within the intercellular substance; the other class provides for the formation of new tissue, and represents the standing army, sometimes called embryonal substance. Before Cohnheim, our knowledge of the mobile elements—the mobilized army—of the body, was nothing; now most of the literature heretofore relating to neoplasmata is, or has become, obsolete. Now coagulable lymph is impossible without the white corpuscles. Organizable fluids have vanished. Through the industry and ingenuity of the great German pathologist a revolution has been worked in medical thought. The study of the mobile elements of the body—the relatively independent elements—promises much. We can almost see daybreak in pathology, a dawn before the coming light which is to illuminate some of the dark places of this most intricate subject. Already leucocytes substitute fibrine. The latter is the product of the former. Wherever there is localized impairment of nutrition referable to irritation, or defective maintenance of nutrition, the result of inherent weakness, there the leucocytes concentrate, feast on the devitalized structures and thereby develop into a tissue replacing that which they have consumed. When the surgeon wishes to dispose of an adventitious structure—a cyst, for example, in the connective tissue, he lowers the vitality by over-stimulation,—irritation, when he confidently expects the leucocytes to congregate and destroy the cyst, substituting a granulation tissue, which in time becomes scar tissue. Now an organizable fluid as the essential product of inflammation, cells playing a passive part, is a thing of the past. Now cell potency, cell subtlety, and cell antagonism constitute the pith and marrow of medical science. There was a period in the history of pathology when all the neoplasmata sprang from the tissue cells, now the place and destiny of tissue cells are fixed. When the fixed elements yet contain some undifferentiated protoplasm, proliferation is possible, otherwise not probable. The mobile cells constitute the mobilized army; the great coördinating centres assemble them at any moment, ready to antagonize hurtful agencies. Irritation always provokes a concentration of the white cells. Irritation means injury. It may be simple or specific. Either way it is a signal for moving the army in solid phalanx to confront noxious agencies, and the combat is hotly contested till victory or discomfiture.

Inflammation, the keystone of medical science, the standard process by which all other pathological conditions are measured, is only to be explained on the theory of cell-antagonism; it is practically a struggle between irritant bodies and white blood-corpuscles. Foreign bodies are invariably invaded by leucocytes, their swarming having for its object to repel or render inert the offending cause. Observations directed to the white cell have been followed by an inspiring increase in our knowledge of the vital properties of cells. The quality of spontaneous motion once accepted, the idea that the cell played a passive part quickly disappeared and in its stead came the conception of autonomy, the fact that the cell nourished itself, is not nourished, that the cell specialized food for its own purposes, actually breaking up compounds and adapting the products to its own growth and development, strikingly illustrated by an independent form of government, for example,

the government of the United States. A great statesman has said ours is a "government of the people, by the people, and for the people." Cells live of themselves, by themselves, and for the whole body. The cells make the central government. The coördinating machinery is formed by the cells, and the cells are in their turn centralized and harmonized by this power. The tissue elements are in direct continuity with the centre, but it is otherwise with the floating, wandering cells; yet their behavior gives evidence of their concern for the well-being of the entire organism. Again, the free cells take into their substance the most refractory substance, digesting solid bodies; sponges and green plants yielding to their digestive and assimilative processes. Observations the most patient and trustworthy in the lower vegetables have demonstrated the fact that bacteria have been seen in the substance of amœboid cells; others have been seen pursuing bacteria, ultimately capturing and destroying them. Throughout the whole animal kingdom mesoderm cells use their ingestive power for destroying microörganisms. Further, this property seems to be utilized for the removal of larval organs. Colorless corpuscles present the same appearances and have similar properties and the same mode of origin in the entire range of living beings. When the irritant or harmful agency is particularly obdurate, white cells exhibit a very strange habit of throwing out processes which unite with a similar process from neighboring cells, until a considerable mass of protoplasm is formed by their confluence, constituting a giant cell. Thus an army of giants may be improvised on occasions of extreme emergency: for example, when the tail and gills of the tadpole are to be swept off, this powerful division is ready for the Herculean task.

Apply these facts to the inflammatory process in mammals. Suppose a foreign body lodged, that moment leucocytes leave the bloodvessels and congregate for the purpose of opposing the intruder. In such diseases as tubercle, leprosy, etc., the giant-cells appear, and in their centre their substance, the specific bacillus, is found. Koch found the bacillus of anthrax and the bacillus of septicæmia in the mouse, enclosed by white blood-cells. We say, with these observations before us, inflammation exhibits a new aspect; cells conquering cells as a process of normal physiology; simply the free cells, the white cells resisting injury, there being a provision not only for concentration, but for increasing their number and augmenting their strength corresponding to the emergency. A recent authority, Mr. Sutton, says: "If we summarize the story of inflammation as we read it zoölogically, it should be likened to a battle. The leucocytes are the defending army, their roads and lines of communication the bloodvessels. Every composite organism maintains a certain proportion of leucocytes as representing its standing army. When the body is invaded by bacilli, bacteria, micrococci, chemical or other irritants, information of the aggression is telegraphed by means of the vasomotor nerves, and the leucocytes rush to the attack; reinforcements and recruits are quickly found to increase the standing army, sometimes twenty, thirty, or forty times the normal standard. In the conflict cells die and often are eaten by their companions; frequently the slaughter is so great that the tissues become burdened by the dead bodies of the soldiers in the form of pus, the activity of the cells being testified by the facts that the protoplasm often contains bacilli, etc., in various stages of destruction. The dead cells, like the corpses of soldiers that fall in battle, later become hurtful to the organism they in their lifetime were anxious to protect from harm, for they are fertile sources of septicæmia and pyæmia, the pestilence and scourge so much dreaded by operative surgeons. The analogy may seem to some a little romantic, but it appears to be warranted by the facts." Just here the question obtrudes, "Are the action which follows mechanical, chemical, and thermal injuries, and the action caused by vital injuries alike inflammatory processes?" In the one, that resulting from physical causes, the nutrient processes are not disturbed, simply increased. In the other, that resulting from vital causes, the cell processes are disturbed, thwarted, and vitiated. It seems unfortunate that the action which succeeds to traumatism should be confounded with that which succeeds to specific germs. The nutrient changes come into vigorous play after an ordinary injury, altered in one particular only, viz., the presence of a palpable neoplasm, which substitutes the structures doomed by the injury. The addition of new material is invisible in ordinary nutrition, growth, and maintenance for example, the substitution being atomic. When a structure is destroyed bodily, as in traumatism, the substitution is corpuscular, therefore, palpable. It is certainly perplexing to assume, as does Sir James Paget, that a visible neoplasm is produced by inflammation, but its development is impossible till after the withdrawal of the inflammation. To get rid of confusion, though we do not emerge from error, is to make a step toward truth. The full effect of traumatism is immediate and complete; it cannot increase itself; therefore, its effects are always limited and within the possibility of estimation, for the reason that cause and effect are in precise correspondence; besides, antiseptics do not influence the changes in any particular. On the other hand, the most extensive and severe injuries of vascular parts, involving bones, joints, the great cavities, etc., are possible without producing inflammation, provided antiseptic precautions be taken. When such complication ensues, it is a wound accident, not a wound incident, and the result of infection. There is no disturbing factor in the process incident to repair; no waste products. If pus is found, it is the result of the intrusion of some noxious agency, some contagion, some pestilence; in short, a specific cause.

If it be agreed to call the action inseparable from ordinary injury, physiological repair, the term inflammation is limited to the series of events referable to a vital agency, which, until very recently, has eluded detection. A specific agency determines a class of diseases as distinctive and definite as the living creatures studied in natural history. Cell-antagonism after physical injury is simply a substitution, through the development of mobile cells, of the tissue which has been spoiled. The fixed elements multiply and develop in the expansion and perfection of the several structures of which they are components, but take no active part in the process of repair after injury. After the perfection of the body, the factors favoring proliferation and those which inhabit it must be in a state of balance. In functional hypertrophy, the balance is toward the side

of proliferation. On the other hand, in non-functional activity, the problem is not so simple; the balance is disturbed toward proliferation by some mysterious agency. How strikingly different when the cell-antagonism is with a vital injury, cell mysteries clash! The bacteria enter into conflict with the mobile and fixed cells, but it is not possible to know how the conflict is carried on. Certainly a series of disturbances ensue in the normal metabolism of the elements. The functional, formative, and nutritive activities, which are the expressions of cell life, must be altered; their vigor perhaps lessened; and their susceptibilities modified. Exceptionally their life is enfeebled or extinguished. The issue of a bacterial affection is either the death of the patient, or the destruction and elimination of the bacteria. It follows that this disturbance of cellular activities is always at the bottom of morbid symptomatology; and observations have shown that disease of this kind, successfully withstood, leaves the elements in a peculiarly unsusceptible condition, insuring an immunity, almost or quite complete, against a fresh invasion of the same or kindred bacteria. This modified susceptibility was practically understood by Jenner. Pasteur, resuming and systematizing the great Englishman's work, successfully modified cell forces, rendering them harmless by cultivation, and sending them on the important mission of destroying the natural proneness to the deadly assaults of the uncultured cells. Whilst we may despair of ever understanding the essential nature of vitality, the study of the causes which regulate life, and their subordination to conditions which may be determined, has led the way to the grandest achievements of recent times. Pasteur and Lister are the great apostles of modern practical thought.

Prof. Huxley has suggested that it may be possible to introduce into the economy a molecular mechanism which, like a cunningly contrived torpedo, shall find its way to some particular group of cells and cause an explosion among them, leaving the rest untouched. Pasteur's cell mechanisms exceed the conception of the great scientist, for they cunningly change the vital qualities of the elements without destroying them. May we not look forward to some great advance in therapeutics in the direction to which Pasteur's genius points, by the study of cell mechanism? Certainly vital subtleties may but cope with vital subtleties. Study of the conditions in which infective agents arise by ascertaining the circumstances which limit or facilitate their diffusion, has already raised surgery to a proud preëminence. With therapeutics it is otherwise, as it is doubtful whether the new facts have yielded the slightest increase of power against the diseases of mankind. Let us not despair. Knowledge must come first, then wisdom brings its practical application. The study of cell possibilities, their readiness and energy in rendering inert noxious agencies, whether introduced from without or arising from within, exhibiting an antagonism at once potent and direct, rather tends to dampen one's therapeutic enthusiasm. The thoughtful student sees nothing abnormal in disease. To be sure there is a physiological emergency, but there is no disorder in the cell processes, rather the perfection of order. If a physical or chemical cause intensifies the cell changes, in other words, determines the physiological emergency, every cell movement is direct, purposive, and efficient, ending only when the intruder is ejected, encysted, or accommodated. On the other hand, if the offence be a vital one, a living cell, a microphite, the spectacle is that of one living creature preying upon another, a declaration of the first law of nature, not an enemy, but an intruder struggling for self preservation, simply a physiological fight for life. Can we hope an ideal tonic for cell-antagonism, such as would innervate the cells on one side and enervate them on the other; the "old chestnut," "Prevention is better than cure," is not yet wormeaten.

Cell-antagonism implies a struggle. The duration of the struggle is determined by the quality of the irritant and the strength and resources of the antagonists. Acute inflammation is a sharp and decisive action; chronic inflammation is slow and indefinite. There are two strikingly important chronic conditions: viz., the interstitial inflammation and the infective granulomata, interesting alike to the physician and surgeon; both are alike disastrous, the one, interstitial inflammation, destroying by cicatricial contraction; the other, infective granulomata, by stopping at the fibroplastic stage, retrogression replacing development. The quality of infection, and the failure to develop beyond the stage of granulative tissue is the exact condition as illustrated by tuberculosis, syphilis, lupus, etc.; in contrast with which is fibrosis of the liver, cirrhosis, fibrosis of the kidney, Bright's disease, fibrosis of the brain, sclerosis, interstitial inflammation, destroying the tissue elements by strangulation, infective granulomata by contamination. Again, the two varieties of inflammation referred to declare that the quality of the irritant determines the effect of the inflammation, the interstitial variety being caused by physical agency, and the infective by a vital one. Cells antagonize physical causes without losing any of their vital qualities. Not so when cells antagonize vital causes. When cells are pitted against cells they may be despoiled of their highest quality, as, in the infectious granulomata, they have parted with formative activity. In short, the knowledge that pertains to the presence of a vital irritant, epitomizes all that has been taught of infective disorders. The symptomatology and pathology of this class of diseases are but the life history, the play of cell activities, metabolisms, and catalysis of antagonizing organisms; as likewise the knowledge pertaining to the presence of a foreign body or physical irritant, is the knowledge, in brief, of fibrinosis; in general, of that entire class of disorders known as interstitial inflammation. A persistent irritant injury, with its attendant concentration of leucocytes; their inevitable development and ultimate transformation; the history of the capsulation of a foreign body, whether it be animate or inanimate, is the history of cirrhosis of the liver; fibrosis of the lung; morbus Brightii; atrophy of the heart; atrophy of voluntary muscles in general; sclerosis of the brain and bone; in short, diffuse capsulation. Some disseminated irritant, say alcohol, determines a sclerosis of the liver; and how? Every particle of alcohol being a foreign particle, having its capsule, it follows that capsulation is as uniformly distributed as the cause. An artisan inhales fine particles of steel or other foreign material, and fibrinosis of the lung is the consequence. The irritants of gout and rheumatism are lodged in the kidney; the interstitial tissue of the organ increases, and in the end strangu-

lates the tubules and Malpighian bodies; results in shrinking and total disorganization of the organ, constituting Bright's disease. Like changes occur in the heart coincident with the development of the interstitial fibrous tissue, with atrophy of the muscular substance, substituting a fibrous induration for its normal structure. A similar change in the voluntary muscles occurs in the curious disease known as pseudo-hypertrophic paralysis, chiefly afflicting children. The connective tissue between the muscular fibres increases so much that the muscles affected may exceed their normal size three times. Later, however, the new tissue shrinks, and the contractile material of the muscles is spoiled. The condition of sclerosis in bones corresponds to cirrhosis of the liver, and Bright's disease of the kidney. In the nerve centres the interstitial tissue—neuroglia—takes on the same chronic overgrowth, strangling the nerve strands and cells, giving rise to the most singular and complicated nervous phenomena. The changes thus induced are recognized by the general term sclerosis. If it involves the fasciculæ of Burdack and the columns of Goll, locomotor ataxia results; if the medulla, bulbar paralysis, etc.

We have purposely avoided reference to diathesis, as also to the precise neurological relationship of cells, not because we deny their influence, but because too little is definitely known. On the contrary, the behavior of cells relatively to irritants is well understood. The presence of a foreign body is at once and directly resisted by the leucocytes, a zone of inflammation, its destruction, transportation or encapsulation, even parasites which resist the death-dealing assaults of the leucocytes, are at least imprisoned in cases of fibrous tissue.

There yet remains for our consideration a mysterious possibility relating to cell life of great practical moment, viz., that of entering upon a life of independence, separating from the central nervous system "headquarters," disregarding the "field telegraph," oblivious to the morning "drum-beat," and wholly ignoring the restraining and directing influence of environing structures. We have learned that however much irritation may affect the vital qualities of cells, their fidelity is always preserved, there being no sign of disaffection, the army ever intact, the fealty of the soldiers supreme. Physical causes—traumatism—may crush or impair the tissues, but the cells come to the rescue with all vigor and directness. The prolonged presence of bacteria may impair the forces of the cells, enfeeble and extinguish them, but as long as life lasts their efforts are in harmony with the purposes of the organism. Thus it appears that alienation is not possible through the agency of irritation, however intensified, modified, or prolonged. The question constantly obtrudes, Is alienation possible to a mature element, to an element that has assimilated itself physiologically as well as anatomically, with the surrounding tissues, taking part in its functions, concurring and coöperating in all the processes of the economy? This question seems to have confronted Cohnheim, when his ingenuity suggested the embryonal hypothesis, viz., that the tumor germ was congenital; that there were in the natural body embryonal elements and tissues not utilized in the elaboration of the normal structures, latent, embryonal rudiments; small, embryonal cells so diminutive as to elude observation, inactive, perhaps, till some exciting cause awakens activity. Is not an embryonic element in a mature organism an alien? Is it not already an independent element? Are not patches in the skin, pigmented moles, islands of cartilage in mature bone, congenital angioma, etc., independent structures, already tumor-germs, congenital rudiments of tumors? Accept the hypothesis of the great German pathologist, and the problem of tumor etiology is almost solved; it remains only to find the exciting cause: the predisposition is inherited: irritation, simple or otherwise, may be nearly allied to the awakening impulse. The difficulty is to reconcile cell-antagonism with the proposition. This doctrine includes the idea that all discordant bodies are treated as intruders, either ingested, transported, or covered up. We can conceive the possibility of the existence of an inoffensive tissue or element, one that simply draws its nourishment from adjacent tissue, without any serious disturbance of their normal metabolism. We would gladly adopt the theory of Cohnheim, which ascribes the origin of tumors, neoplasms, to persistent germinal rudiments. Certainly it has much to recommend it. Countless latent embryonal structures, relatively independent, are tolerated by the organism, remaining inactive till favored by some concurrent event, the nature of which is incomprehensible, when they may grow according to their bent. Is it not quite as possible that there may be similar relatively independent elements, ready when stimulated to multiply independently? Congenital angiomata often grow without definite limit; pigmented moles—black, slightly raised patches in the skin—with which all are familiar, are composed of tissue exactly resembling sarcoma; always suspicious because of their disposition to proliferate independently. It is most difficult to believe in the infidelity of covenant cells, of sundering the compact which unifies the organism. Emancipation seems almost out of the question. We must not only believe that dependent benignant elements become independent, but indifferent, vicious, impetive. In short, the elements of the host become the elements of a parasite—a parasite so vigorous, corrupt, and wicked as to destroy its source.

The painful part of the retrospect of a year is that which recalls those who have been taken from us. The past year has had a very special grief for our Association in the death of one of our ex-Presidents, Dr. William Owen Baldwin, who died at his residence, and the place of his birth, Montgomery, Alabama, May 30, 1886. He was among the early members of the American Medical Association, and its President in 1869, presiding at New Orleans. His address on that occasion abounded in Christian and patriotic sentiments, eminently befitting the good and great physician. The committee charged with the organization of the Ninth International Medical Congress, which meets at Washington City, this year, had named him as one of its Vice-Presidents. Dr. Baldwin was remarkable for his culture, the eloquence of his speech, and the beauty of his diction, and will be remembered as an imposing figure in the history of this great Association.

I need scarcely remind you, gentlemen, that we shall have, after a few weeks, assembled in our midst, the medical men of all nations. Soon we shall extend the hand of friendship to those with whom we have hereto-

fore been united in interest and sympathy in the cause of science. We know that everything is being made ready, and that success is assured. Again, you will join me, I know, in the declaration that a hearty American welcome awaits their advent, and that the Ninth Meeting of the great Congress will be memorable in the history of its organization.

ORIGINAL ARTICLES.

THE INFLUENCE OF BEER ON SALIVARY AND GASTRIC DIGESTION.

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THE physician is frequently puzzled when prescribing for a convalescent, as to which alcoholic beverage of a mild and pleasant character he can recommend with the least fear of "upsetting" the stomach. The writer has, therefore, attempted to decide this question, and the results are tabulated further on.

Before passing to a direct consideration of the methods employed and the results obtained, it is necessary that a few physiological and therapeutical points be brought forward. Everyone knows that alcohol retards digestion in the test-tube, but aids it in the stomach; and while these facts seem somewhat paradoxical, they are, in reality, perfectly logical, for the following reasons:

In the test-tube we have a given quantity of digestive fluid on which the alcohol may act, and we cannot have any increase in the quantity of that fluid, because it is surrounded by glass walls. In the stomach the alcohol acts quite as much on the digestive ferment as it does in the test-tube, but it also, by its presence in that viscus, excites the gastric glands to such an extent that an excess of gastric juice is secreted sufficient to counterbalance any anti-digestive influences. In other words, the action of the spirit on the living tissue is greater than its action on the digestive ferments.

Theoretically, alcohol should never be used in indigestion or in conditions of gastric weakness; practically, every physician of experience or education gives alcohol under just these circumstances, and, very properly too, gives the stronger alcoholic preparations instead of the weaker. In typhoid fever we give brandy or whiskey in the first stages, almost solely for the purpose of increasing digestion.

It is, therefore, clear that any experiments made by means of artificial digestion do not give us results which can be looked upon as comparable to true digestion. At the same time it is a fair supposition that beer which retards digestion the least in the test-tube, will also retard it the least in the stomach, unless it can be proven that it contains scarcely anything but water, in which case the condition of affairs is exactly reversed.

It is also known by those interested in such matters in the profession, that beer aids digestion but little or at all by means of its alcohol, since that constituent is present in so diluted a form and in such small quantity that it can neither aid digestion to any extent by acting on the coats of the stomach nor retard it by influencing the digestive fluid. It should not be forgotten that while all alcoholic fluids theoretically retard gastric digestion, that beer does so much less than brandy or whiskey owing to its small amount of alcohol, and while, as has already been shown, this fact rather obtains against its practical use, that this is overcome by the carbonic acid and bitter principles of the beer, which stimulate, excite, and act as bitter tonics on the gastric glands.

Beers to be wholesome should, therefore, contain carbonic acid and bitter principles to a fair degree, the alcohol taking a subservient and almost useless *rôle* so far as digestion is concerned.

So far in this paper the influence of alcoholic beverages on gastric digestion has received our entire attention, simply because it is by far the most important part of the subject.

In some recent experiments made by Duggan, of Baltimore[1], it was decided that alcohol in all its forms very markedly retards the conversion of starch by diastase; and, although it is a general impression that beer contains enough diastatic power to aid, at least, somewhat in the reduction of starch, it would seem probable that any such action would be set aside by the alcohol present, and the results of my experiments support this view.

The question of the influence of beer on salivary digestion is, however, of so little importance that it is hardly to be considered, so that, without further comment the method of these experiments will be described.

In the experiments on gastric digestion thirty minims of a standard solution containing forty grains of Fairchild's scale pepsin, and ten minims of hydrochloric acid to the ounce, were placed in each test-tube, which was immersed in a water-bath at 110° F.[2] To this were added thirty minims of beer, and finally one grain of hard-boiled egg albumen, care being taken that each piece of albumen should be of the same shape as the others, in order that an equal amount of surface might be exposed to the digestive fluid in every instance. In order that the dilution might be equal in both the control and beer tubes, thirty minims of water were added to the former.

Twenty-four experiments were made with each beer, and the space of time elapsing between entire digestion in the control and beer tubes carefully noted in every case. The figures in the table, therefore, show the average retardation of digestion as it occurred in twenty-four experiments, and accurately represent the status of each brand examined.

The tests performed with salivary digestion were made in much the same manner as those on the gastric, ten minims of a standard solution of boiled starch being used in every test along with thirty minims of saliva and an equal quantity of beer. In

[1] Studies from the Biological Laboratory of Johns Hopkins University, vol. iii. No 9, February, 1887.

[2] The writer is perfectly aware that this amount of pepsin is many times as great as it need be, but as the object was not to test the amount of pepsin necessary, but the action of the beer, and as time was of some moment, this strength was arbitrarily employed. It should also be remembered that the addition of thirty minims of beer dilutes the digestive fluid *one-half*, and it was for this reason that ten minims of acid to the ounce were used instead of the ordinary quantity, viz., five minims.

the control tubes water was introduced in place of the beer, as it was in the former experiments. The method of determining that all the starch was digested was the iodine test, the reagents used for the qualitative estimation of glucose being valueless, owing to the fact that they do not prove entire conversion of the starch, and also because of the presence of glucose already free in the beer itself. The starch in any one tube was not considered converted until there was no longer any blue color produced when iodine was added.

To sum up the results of these experiments, we find that the beers examined varied in their action as much as fifty-nine minutes, and that while most beers do not retard digestion in all probability in the stomach, that others, such as those mentioned in the first part of the table, aid digestion very materially. Thus, in the case of the Bergner & Engel Brewing Co's Tannhäuser, it will be noted that even in the test-tube the average delay in gastric digestion equalled but one minute and thirty seconds.

While we can use beer as a tonic and stimulant to digestion, we cannot regard it as a beverage possessing any real nutritive value, since its chief nourishing constituent is glucose, which is, however, in very small amount, the greater part of it having been transformed in the fermentation into alcohol and carbonic acid.

If, however, we use the term "beer" as do our English cousins, then we include a large number of the "heavier" liquids of this class, which, of course, contain a larger proportion of nutritive matter.

TABLE SHOWING THE INFLUENCE OF BEER ON SALIVARY DIGESTION.

Variety of beer.	Brewer.	City.	Average retardation of digestion.
Hathaway,	V. Hathaway & Co.	Boston,	1 min. 30 sec.
Champagne Lager Beer,	H. Clausen & Son	New York,	5 "
Tannhäuser,	Bergner & Engel Brewing Co.	Philadelphia,	6 " 1 "
Budweiss,	.....	....	7 " 24 "
Eimbecker,	Bergner & Engel Brewing Co.	Philadelphia,	8 "
Bergdoll,	L. Bergdoll Brewing Co.	"	8 " 12 "
Best,	Phil. Best Brewing Co.	Milwaukee,	9 " 18 "
Kaiser,	.....	Bremen,	10 " 42 "
Pilsener,	Bergner & Engel Brewing Co.	Philadelphia,	11 " 15 "
Niagara,	Niagara Falls Brewing Co.	Niagara Falls,	11 " 32 "
Continental,	Cont. B. Co.,	Philadelphia,	12 " 8 "
Royal,	H. Clausen & Son	New York,	12 " 12 "
Anheuser-Busch B. A.	Anheuser-Busch Br. Association,	St. Louis,	13 "
Ehret's N. Y Lager Beer,	George Ehret.	New York,	14 "
Rochester,	Bartholomay Br. Co.	Rochester,	18 " 30 "
Schlitz, Export Beer,	Jos. Schlitz Brewing Co.	Milwaukee,	19 " 18 "
Betz,	J. F. Betz & Son,	Philadelphia,	21 " 11 "

TABLE SHOWING THE INFLUENCE OF BEER ON GASTRIC DIGESTION.

Variety of beer.	Brewer.	City.	Average retardation of digestion.
Tannhäuser,	Bergner & Engel Brewing Co.	Philadelphia,	1 m. 30 s.
Pilsener,	" "	"	13 " 30 "
Eimbecker,	" "	"	23 " 27 "
Anheuser-Busch B. A.	Anheuser-Busch Br. Association,	St. Louis,	25 " 8 "
Rochester,	Bartholomay Br. Co.	Rochester,	36 "
Continental,	Cont. Br. Co.	Philadelphia,	36 " 20 "
Betz,	J. F. Betz & Son,	"	1 hour.
Kaiser,	.....	Bremen,	1 " 13 " 30 "
Budweiss,	.....	.....	1 " 18 " 15 "
Niagara.	Niagara Falls Brewing Co.	Niagara Falls,	1 " 20 " 6 "
Royal,	H. Clausen & Son	New York,	1 " 22
Best Export	Phil. Best Brewing Co.	Milwaukee,	1 " 22 " 5 "
Champagne Lager Beer,	H. Clausen & Son	New York,	1 " 24 " 22 "
Ehret's N. Y. Lager Beer,	George Ehret,	" "	1 " 28 " 23 "
Bergdoll,	L. Bergdoll Brewing Co.	Philadelphia.	1 " 51 " 21 "
Hathaway,	V. Hathaway & Co.	Boston,	1 " 52 " 20 "
Schlitz Export Beer,	Jos. Schlitz Brewing Co.	Milwaukee,	1 " 55 " 12 "

EXSECTION OF THE KNEE-JOINT FOR TUBERCULOSIS.[1]

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WHITE swelling of the knee-joint in adults of the laboring class can, for various external reasons, rarely be treated by orthopædic measures. In children a rational mechanical and general treatment will often reward the patience and skill of the physician by excellent results. Exsection of the knee-joint in infants is to be avoided as long as possible, on account of the great shortening that is caused by the removal of the epiphysis adjoining the knee, on which depends the growth of the thigh and tibia. In adults exsection is the shortest and safest way of eliminating tedious morbid processes and substituting firm ankylosis for a useless joint.

Arthrectomy, or exsection of the capsular ligament alone, as suggested by Volkmann, has not been attended with good success in the experience of the writer. Two cases, one in an adult, the other in a child, resulted in relapse of the tubercular affection, although great care was taken in removing the entire capsule. A third case was permanently cured. The following are brief synopses of these cases:

CASE I.—S. L., metal worker, æt. twenty-seven. On February 28, 1882, arthrectomy was

[1] Read at a meeting of the New York Surgical Society, May 25, 1887.

performed, the patella being removed for fungous arthritis of the knee-joint. Primary union occurred. On March 22d the disease recurred in the cicatrix, and gradually involved the articular surface of the femur and tibia. Amputation was performed by Dr. J. Adler.

CASE II.—Fred. O., æt. five and one-half. Tubercular arthritis of the knee-joint. On January 26, 1887, arthrectomy was performed at the German Hospital. On March 22d the entire cavity was opened and scraped because of recurrence of the disease. At the present date the boy is still under treatment.

CASE III.—George K., butcher, æt. twenty-six. On July 6, 1882, arthrectomy was performed at the German Hospital; a carious patella being removed. On November 5th he was discharged cured, with slight mobility of the joint.

In children exsection should be made only under very urgent, especially vital indications, and should be strictly limited to the removal of diseased parts. By following Schede's plan of dressing the wound, the hollow spaces remaining between the opposite joint-surfaces will be filled by an organizing blood clot, and firm union without suppuration may be obtained.

CASE IV.—Eva G., æt. eight. Osseous tuberculosis of the knee-joint, with a sequestrum in the external condyle; granular osteitis of internal condyle, and multiple cheesy deposits in the thickened capsule; subluxation backward of the tibia, with rectangular contraction. On August 12, 1886, partial exsection of the knee-joint was performed at Mt. Sinai Hospital. After the removal of the sequestrum a deep recess was left behind the intercondylar notch. The patella and the entire capsule were removed; the hamstring tendons were divided to prevent recontraction. The tibia was pared superficially, and the bones were held in apposition by a nail driven diagonally through the femur and tibia. A plaster-of-Paris bandage was applied over Schede's dressing. The patient had an attack of erysipelas. By reason of these complications healing was delayed.

On February 27, 1887, the patient was discharged cured, with firm ankylosis.

Total exsection of the knee-joint is usually performed by the writer in the following manner: After careful scrubbing and disinfection of the region of the knee, the foot, the leg, and the thigh of the diseased limb are enveloped in clean towels, wrung out in corrosive sublimate solution. The limb is elevated vertically for five minutes, in order to deplete its vessels, and the constricting band is applied high up on the thigh. The knee is flexed, and an incision, commencing at the middle of one condyle of the femur and extending in a semicircular line *above* the patella to the middle of the other condyle, is carried into the joint. The transverse incision above the patella, proposed by Eugene Hahn, of Berlin, has many advantages over the incision made below the patella. The chief one is the free access which it affords to the bursa of the quadriceps, which must be carefully exsected along with the capsule.

The crucial ligaments are divided close to their attachment to the femur, and the patella, the semilunar cartilages, and the entire capsule, together with the bursa of the quadriceps, are exsected with mouse-tooth forceps and curved scissors. Care must be taken not to overlook some small bursæ situated behind the head of the tibia, which regularly communicate with the interior of the joint. The condyles of the femur are sawed off, the plane of section corresponding to the transverse diameter of the epiphysis of the femur. Disregard of this rule will lead to ankylosis in such a position that the patient will be bow-legged. The articular surface of the tibia is sawn at a right angle to the long axis of this bone. All visible orifices of vessels are secured by ligatures; they can be recognized by compressing the vicinity of the wound with both hands.

If the transverse incision was not made long enough to permit of an easy arrangement of the drainage tubes in the angle of the wound, it should be sufficiently lengthened. The inner ends of the tubes should reach into the popliteal space, just behind the sawn surfaces, and the tubes must not be compressed and occluded by the tension of the soft parts surrounding them. The limb is placed upon a long cushion covered with a clean towel wrung out of corrosive sublimate solution, and, while the sawn surfaces are held in exact apposition, from two to four long steel nails, previously well disinfected by heating in an alcohol flame, are driven diagonally through the femur and tibia, so as to lock the bones firmly in the desired position. The cutaneous incision is united by a sufficient number of catgut sutures. The limb is raised by the foot from the cushion, which is then removed. Strips of disinfected rubber tissue are slipped under the safety-pins securing the ends of the trimmed drainage tubes, and an oblong compress of iodoform gauze is laid over the entire line of union. A suitable number of sublimated gauze compresses are arranged around the knee-joint, and two short lateral splints of veneering, or thin board, are firmly bandaged on, to serve as a deep support. Over these is placed an ample external dressing of corrosive sublimate gauze, also firmly secured by a gauze bandage. The towels are removed, and the uncovered parts of the limb are enveloped in a layer of borated cotton, so as to equalize its outline. Two long lateral pasteboard splints, secured by muslin or crinoline, complete the dressing for children or adolescents.

In adults, the limbs being stouter, are better secured by a firm circular plaster-of-Paris splint. The limb is elevated vertically, and the constricting rubber band is removed; the return of the circulation is attested by the pink color of the toes. As soon as these turn pale, the extremity can be brought to the horizontal position.

If asepticism was well maintained the operation will be followed by slight aseptic fever, and no severe pain. The dressings should remain undisturbed for thirty days, so as to afford a good chance for bony union. After this period the splints and dressings can be removed, and the nails and drainage tube can be withdrawn. The remaining sinuses are dressed lightly, the limb is encased in a silicate of soda splint, and the patient is ordered to walk

about on crutches, whether osseous union is present or not. Gradually the crutches are dispensed with, and the patients generally learn to walk very well on an elevated sole, which compensates for the shortening.

Of twelve cases of total exsection performed by the writer for tuberculosis, eleven recovered, and one died of meningeal tuberculosis. The history of the fatal case was as follows:

CASE V.—Fred. F., æt. seven. Osseous tuberculosis after arthrectomy performed by Dr. F. Lange, in June, 1885. On March 4, 1884, total exsection was done at the German Hospital. The operation revealed two periarticular abscesses, and five cheesy foci in the tibia and femur. Suppuration of the wound occurred. On March 10th an abscess on the outer aspect of the knee was incised. On April 23d separation of the epiphysis of the tibia took place; the separated epiphysis was firmly united to the femur. Symptoms of meningeal tuberculosis developed, to which the patient succumbed, May 31st.

In one of the remaining eleven cases amputation of the thigh became necessary on account of suppuration. The following is a brief synopsis of this case:

CASE VI.—H. D., professional athlete, æt. thirty. Extensive destruction of the right knee-joint by tuberculosis, complicated with pyogenic infection. The knee, leg, and thigh contained a large number of abscesses; there was profuse secretion from seven fistulæ. The case was not suitable for exsection and amputation was advised; but, at the patient's earnest request that an attempt should be made to save his limb, total exsection was done at the German Hospital, on February 14, 1884. As suppuration was expected, the extremity was fixed to an interrupted dorsal suspension splint, made of hoop iron, by plaster bandages. Profuse suppuration followed, attended with evident prostration. On April 19th the thigh was amputated. The wound healed by granulation, and in June the patient was discharged cured.

Ten cases were cured, in which the limb was preserved; in nine of these firm, bony ankylosis was secured. In one there was ligamentous union, viz.:

CASE VII.—Nicolas G., carpenter, æt. fifty-four, synovial tuberculosis, with high temperature and emaciation, following slight traumatism. Contraction of the knee at an acute angle, with constant violent pain. On February 19, 1886, a puncture was made at the German Hospital, a small quantity of turbid, bloody serum being withdrawn. Under an anæsthetic the limb was straightened, and the joint was incised, irrigated, and drained. The fever at once disappeared, but flocculent pus commenced to flow from the tube, confirming the assumption that tuberculosis was present. In view of the patient's age, and his wretched general condition, which was due partly to disease and partly to chronic alcoholism, amputation was thought to be advisable. The plan of operation was changed at the operating table, and total exsection of the knee-joint was done. Hemorrhagic synovitis, and a large cheesy deposit in the bursa of the quadriceps, were found. Five nails were introduced, and an aseptic dressing was applied, with pasteboard splints. Temporary compression with Martin's bandage was employed, in order to control the secondary oozing. The dressing was changed on the twenty-second day. Four nails were found to be loose, and were withdrawn. On May 8th, the drainage tracks were scraped, and the fifth nail was removed. Ligamentous union had taken place. A plaster-of-Paris splint was applied. By June 12th the sinuses had healed, and the patient was walking without a stick or crutches, wearing a light silicate-of-soda splint, though union of the bones was not perfect.

The following are brief notes of the other nine cases:

CASE VIII.—Willie B., æt. three and a half. Osseous tuberculosis with fistulæ. Total exsection was performed, February 2, 1879. April 2d, patient was discharged, cured.

CASE IX.—Charles H., æt. twelve. Osseous tuberculosis, with fistulæ; contracture, and subluxation backward. Total exsection, June 13, 1884, at German Hospital. Hahn's incision was made, two nails were introduced, and a plaster-of-Paris splint applied. Some fever, and deep-seated œdema of the region of the knee followed. The sawn surfaces and the flesh wound united by first intention. The nails being withdrawn on the twelfth day, some pus exuded from their tracks, showing that they had apparently not been well disinfected. Several revisions were required on account of the development of unhealthy granulations in the drainage holes. On February 4, 1884, the patient was discharged with firm ankylosis, and no fistulæ.

CASE X.—S. B., æt. nine. Osseous tuberculosis, several fistulæ, subluxation. August 26, 1885, total exsection at Mount Sinai Hospital. Nails were introduced, and a plaster-of-Paris dressing applied. September 25th the dressing was changed, and the nails and drainage tubes were withdrawn; firm ankylosis. October 10th, patient discharged, cured.

CASE XI.—Leonard P., waiter, æt. nineteen. Synovial tuberculosis, no fistulæ. August 27, 1885, total exsection at the German Hospital. September 27th, plaster-of-Paris splint, dressings, drainage tubes, and nails removed. October 9th, sinuses healed. October 19, discharged cured, with firm ankylosis.

CASE XII.—Bertha D., æt. twelve. Synovial tuberculosis of five weeks' standing. Continuous high fever, with rapid emaciation. A puncture yielded a small amount of bloody serum. January 21, 1886, total exsection at Mt. Sinai Hospital. The capsule was found studded with innumerable miliary tubercles. The fever disappeared immediately after the operation. February 20th, the plaster splint was renewed, and the wound was found to have healed by first intention. March 10th, the patient was discharged cured, with firm ankylosis.

CASE XIII.—Lizzie B., æt. twenty. Osseous tuberculosis of eighteen years' standing; rectangular contraction with subluxation backward. February 12, 1886, total exsection at the German Hospital. March 10th, change of dressings, three nails and the drainage tubes being removed; primary union.

April 4th, patient complained of a good deal of pain in walking. A hard body could be felt under the skin on the outer aspect of the tibia. An incision exposed the head of the fourth nail, which had not been found at the first change of dressings. It was withdrawn with some force, a little blood exuding from its track. May 9th, patient discharged cured.

CASE XIV.—Anna L., æt. twenty-two. Synovial tuberculosis with ulceration of the articular surfaces of both the femur and the tibia. May 10, 1886, total exsection at the German Hospital. June 12th, first change of dressings. Primary union of the soft parts; delayed union of the bones. August 1st, discharged cured, with firm ankylosis.

CASE XV.—Synovial tuberculosis, with caseous deposits in several recesses of the capsule, notably around and behind the crucial ligaments. Caries of the articular surfaces. May 18, 1886, total exsection at the German Hospital, the operation being followed by slight fever. Dressings removed May 26th, showing marginal slough of the upper edge of the skin-wound. June 17th, nails removed. Firm ankylosis. July 26th, patient discharged cured.

CASE XVI.—Emma F., æt. twenty-seven. Synovial tuberculosis, with caries of the articular surfaces. April 18, 1887, total exsection. April 22d, considerable amount of secondary oozing, necessitating a change of the external dressings and plaster splint. There was some fever. May 23d, dressing changed; primary union, with firm ankylosis. The tubes and three nails were removed; a fourth nail could not be found. To prevent the disagreeable necessity of cutting down in search of a nail buried in the tissues, Dr. F. Lange's suggestion of fastening a silk ligature to the head of each nail before driving it in, seems to be very appropriate. June 4th, an incision was made over the seat of the fourth nail, which had healed in completely, and it was withdrawn.

CHLOROFORM AND FORCEPS.

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OPINION is, perhaps, equally divided upon the question of the applicability of chloroform. It is customary for the advocates of either side of a controversy to publish remarkable successes when reached through the medium of their favorite drugs and methods, but the humiliating disappointments are buried in oblivion; thus sometimes a conclusion, which is apparently sustained in current literature, receives a rude shock in actual practice.

Up to within a few days I have been a firm believer in the value of anæsthetics in parturition. They have frequently helped me where there was severe suffering to be relieved, and heretofore have never increased the patient's risks.

But my series of successful cases has been broken by a most discouraging result. My father, who has had a wide experience, is a determined opponent of what I consider scientific aids to delivery. He has been remarkably fortunate without them, and consequently insists upon their inutility.

Recently we had an opportunity of bringing the point at issue to a trial. Mrs. F., a petite blonde, well developed and in excellent health, was confined on April 22, 1887. I say she was in good health, but previously, at the time of fecundation she had serious trouble with her stomach, and for the first three months of pregnancy was in bed. All of the usual remedies for this condition were tried without avail, and in despair she swallowed a teaspoonful of oil of rue, hoping thereby to induce an abortion. The result was sharp gastro-enteritis, which was relieved with orange juice. After taking the rue the appetite for the oranges developed, and in two weeks she consumed a whole box of Florida oranges.

The *modus medendi* in this instance is strikingly obscure; there was a substitution of one morbid process for another when the rue was swallowed, but when it subsided the reflex influence ought to have again appeared.

Labor pains were first felt at 3 A.M., they were far apart and slight for several hours; then they suddenly increased in frequency and force, and at 10 A.M. the head passed the upper strait and seemed about to engage in the pelvis. But no progress was made. The amniotic fluid was discharged, strong expulsive pains came on, and still the head lingered. The woman was restless and wilful, and would not make the proper effort to help herself. Therefore, being an advocate of chloroform in just such conditions, I thought the case a proper one for its use.

My father, who was called as consultant, did not favor any interference, and gave it as his opinion that the labor would terminate favorably—sometime, but if chloroform was used we would have post-partum hemorrhage, and with forceps we would most probably have a ruptured perineum. If he had not condemned anæsthetics and instruments on general principles, I would have been disposed to heed his advice. Unfortunately for my theory, I insisted upon terminating the labor with all possible speed.

The chloroform caused the pains to relax, which was what was prognosticated of it. But having the forceps in position the desire to terminate the delivery was too strong to be resisted, and I made traction on the head. It yielded gradually, and when the perineum began to stretch I tried to slip the forceps off, but only had time to get one blade away before the head came out with a rush, rupturing the perineum through the sphincter ani.

The child was cyanosed, and died the following evening.

The placenta came away with the child, and for a few minutes we devoted our attention to the latter. All the methods known to us for the resuscitation of asphyxiated children were tried, especially those recommended recently by Drs. Blackwell and Smith.

The mother bled rapidly, and before we could control the hemorrhage with ergot, ice, and pressure, the bedclothes and mattress were saturated and the blood was running to the floor.

After the flooding was stopped an immediate operation upon the perineum was proposed with cocaine as an anæsthetic to the surface, but it proved unsatisfactory, and chloroform was again administered.

To-day, May 9, 1887, our patient is doing re-

markably well, but the case has taught me a severe lesson. The result was most disastrous when it is remembered that it was made the test for the advisability of giving chloroform and using the forceps in a protracted labor.

MEDICAL PROGRESS.

ANTISEPSIS FOR THE NEWBORN.—MILLER, at the Second Congress of Russian Physicians, stated that the newborn become ill with septicæmia and pyæmia very easily: the ground for the frequency of such illness is neglect of antiseptic precautions. In the asylum at Moscow 700 to 800 newborn perish each year from pyæmia.

These cases may be divided in three classes:

1. In one class the infection appeared in the first three days of life when the cord is still fresh or is just beginning to decompose. In such cases the infection must have occurred during intrauterine life. The post-mortem examination in such cases reveals extensive disintegration of the blood without marked lesion of any organ.

2. In these cases pyæmia appeared on the fourth or fifth day of life, simultaneous with the separation of the cord. Post-mortem appearances are purulent and fatty degeneration of different organs, inflammation of the peritoneum and pleura, and ulcerative endocarditis. This infection has its source in the umbilicus.

3. Cases of late pyæmia. The cause of these infections is found in the bad condition of the foundlings' asylums, and this infection is a frequent complication of inflammatory processes. Post-mortem examination in these cases reveals the umbilicus healthy and the exciting cause is found in stomatitis, intertrigo, and anal fissures following rectal prolapse.

Children suffering from *blennorrhœa neonatorum* frequently develop inflammation about the umbilicus; such children should be treated with especial care.

The writer recommends Ringer's method of treating the cord, drying, powdering with boric acid and wrapping in salicylated cotton.

When suppuration occurs carbolic lotions and iodoform should be used. Other diseases likely to cause pyæmic infection must be treated with especial precautions.—*Centralblatt für Kinderheilkunde*, May 2, 1887.

ANTIPYRIN AS AN ANALGESIC.—GERMAIN SÉE finds that antipyrin allays pain by suppressing sensibility and reflex excitability without disturbing the rhythm of the heart or the force of the circulation.—*Gazette Hebdomadaire*, April 22, 1887.

TREATMENT OF SERPIGINOUS ULCERS OF THE CORNEA. — DEHENNE reports the following treatment in *L'Union Médicale* of May 7, 1887:

1. Incise the superior and inferior lachrymal puncta, and irrigate the lachrymal duct freely with an antiseptic solution (boric acid 4 to 100).

2. Irrigate the conjunctival sacs with sublimate solution 1 to 2000.

3. Cauterize the ulcerated surface with a fine thermocautery point at white heat.

4. If there be pus in the anterior chamber, perforate the cornea with the same point and evacuate the pus.

5. Drop into the diseased eye four times daily five or six drops of a neutral solution of sulphate of eserine, 1 to 200.

TREATMENT OF DIARRHŒA BY IODOFORM AND CHARCOAL.—PICCHINI treated eight cases of diarrhœa, with symptoms of fermentation, with the following:

Iodoform	grs. 9.
Ether	ʒ 3ss.
Vegetable charcoal, finely powdered	ʒ 3ss.
Glycerine, ...	ad. ʒ 12.

The iodoform must be dissolved in the ether, and the powdered charcoal thoroughly mixed. After the ether has evaporated the glycerine should be added. To take in twenty-four hours, by teaspoonful or tablespoonful, suspended in a glass of water.—*Journal de Médecine*, May 1, 1887.

THE STRING DRAIN, A SUPPLEMENT TO THE ORDINARY DRAINAGE TUBE.—DR. JENKINS proposes the following expedient in *The Annals of Surgery* for May, 1887:

The method proposed is a simple adjunct to the drainage tube, and is, in so far as the writer is aware, novel. The liberty is taken of calling it "the *string drain*."

It consists in introducing one end of 30 or 40 feet of rough string, highly hygroscopic, and completely aseptic, through the usual "Chassaignac drainage tube," so that, when the last is placed in the wound, the string may be drawn through, from time to time, as will be explained hereafter.

The string may be of cotton, linen, or wool, that has been freed of fat and disinfected, for which purpose it is recommended that it be treated after the manner that v. Bergmann prepares his gauze—by immersing the absorptive string for one hour in the following: Sublimate 1, glycerine 50, alcohol 100, water 150, warmed, to be dried, and kept in hermetically sealed glass jars; it will then hold ½ per cent. sublimate, and is very absorbent. The end of the string being passed into the tube, and the tube placed in the wound, and it closed, then the strings and aperture or apertures of tube are covered by the usual protective of "gutta-percha paper," or "Lister's oiled silk," to hinder evaporation or gluing of the string. The string is now tried, to see that it draws freely, and is so placed that it lies along the line of least resistance, and closely applies to the body's surface; over the gutta-percha paper and string, the gauze and cotton, etc., are to be placed. The coil of the string may be kept in an antiseptic magazine, such as a glass bottle, which can be included in the bandage or left out, as desired; in the last case, when not being used, the bottle should be tightly stoppered, and covered by an antiseptic bandage. The draw-end should be left out and can be drawn upon from time to time, as may be necessary, until it comes free from secretion.

The soiled end of the string can then be cut away, and it and the bandage, at its emergence, disinfected with a saturated solution of iodoform in ether.

The other end should be protected most rigidly against infection, as mentioned above.

Or the string might be placed in a coil in the wound

itself, in form of tampon, and passed out through a drainage tube.

This might apply in wounds such as would be left after the removal of tumors (as lipoma), or might thus be used with Martin's drainage tube in "Douglas's fossa."

The process advocated is recommended during the first forty-eight hours, when the wound is pouring out a large quantity of serum, before granulation is established on the wound's walls, which follows especially operations in which "carbol" or other irritants are extensively employed, and in this time the tube is most likely to be stopped by coagula.

ARSENIATE OF STRYCHNINE AND PEPSINE.—AURILLAC has found the following useful in dilatation of the stomach and constipation:

Pepsine	grs. 1½.
Ext. of malt	♏ 2.
Arseniate of strychnine . .	gr. $\frac{1}{150}$.

For four capsules or wafers.—*Les Nouveaux Remèdes*, May 8, 1887.

THE TREATMENT OF PHTHISIS.—DETTWEILER, at the recent Congress for Internal Medicine, read a paper on this subject, whose conclusions are as follows:

1. There is no specific treatment of phthisis.

2. The essence of treatment consists in regulating tissue changes: best accomplished by fresh air, the cultivation of bodily endurance, nourishment, and exercise.

3. A climate free from phthisis does not exist; that climate is best which best permits the treatment described.

4. Phthisis is curable; the effort must be made to cure every case, especially in its early stages.

5. These points are best gained by treating the phthisical in buildings and localities especially fitted for them. —*Berliner medicinische Wochenschrift*, April 27, 1887.

THE TREATMENT OF WOUNDS.—TREVES, of London, detailed, at a recent meeting of the Harveian Society, his method as follows:

Dealing first with wounds of the lower extremities, he dwelt on the greater mortality attending these injuries, and the reasons assigned for healing taking place more slowly and imperfectly. In his opinion bad ventilation is one cause; the atmosphere under the bed-clothes is close and stuffy, if not positively fetid; the limb may be wrapped up in cotton-wool, but ought to be freely exposed to the air. Again, in wounds about the toes and feet, the large sheaths of the tendons are opened; no care is taken to close them, and they become practically open tubes, in which pus accumulates. In removal of the toes, healing is often prevented by sloughing of the flaps; this is due to the operator neglecting to respect the integrity of the artery which supplies blood to the flap. In cases of fractured patella no treatment is better than the use of Malgaigne's hooks, provided these are scientifically applied; the author described his method of applying them. Mr. Treves protested against the use of plaster in putting up compound fractures of the lower limb; his plan is always to fix these fractures by the use of straps and buckles, to expose the limb freely to the air, and to keep the wound constantly powdered with iodoform until a firm scab formed. While dealing with wounds of joints, the author remarked on the great value of irrigation, and gave notes of a case in which amputation of the lower limb for desperate disease of the knee-joint had been avoided by keeping a stream of water flowing through the joint for a month. In discussing the dressing of operation-wounds, the relative merits of iodoform, corrosive sublimate solution, etc., were discussed, but preference was given to dry sponge dusted over with iodoform. Great stress was laid on the different drainage of abscess cavities and wounds; for large abscesses, as in suppurating hydatids of the liver and psoas abscess, the tubes ordinarily used were quite inadequate.—*British Medical Journal*, April 30, 1887.

ATTEMPTED REMOVAL OF A NEEDLE FROM THE HEART.—The following case is reported by the *British Medical Journal* of April 30, 1887, from the recent German Surgical Congress:

A student of the Polytechnic School had endeavored to kill himself by driving a needle into his heart. Though the needle entered the heart, the attempt failed. The needle could be distinctly felt. The pericardium was opened, but the needle was not found; a second operation was undertaken, and the operator was successful in seizing the needle, but failed to extract it, so that it slipped completely into the heart, where it could be felt. The operation having been abandoned at this stage, the patient made a good recovery.

FORMULA FOR THE USE OF CARBONATE OF LITHIUM AND ARSENIATE OF SODIUM IN GLYCOSURIA.—VIGIER gives the following:

℞.—Lithii carbonat.	gr. 1½.
Sodii arseniat.	gr. $\frac{1}{20}$.
Extr. gentian.	gr. ¾.

for each pill.

One pill should be taken morning and evening.—*Journal de Médecine*, April 24, 1887.

SIMPLE TREATMENT OF CHRONIC ENLARGEMENT OF THE TONSILS.—DR. BERESFORD says: "By the use of a strong solution of tannic acid injected two or three times a week, with the daily use of a gargle of the same, the knife never need be resorted to. I have used the above treatment in the case of a man, aged twenty years, with good success. I made an application of muriate of cocaine before inserting the needle, and used the injection every three days."—*Technics*, May 3, 1887.

TREATMENT OF PHTHISIS BY INHALATIONS OF THE VAPOR OF A BOILING SOLUTION OF PICRIC ACID.—HUA and BRUÈRE, in the *Gazette Hebdomadaire* of May 13, 1887, call attention to their observation, made originally in 1885, that phthisical workmen employed where they inhaled these fumes, were much benefited. They referred the matter to the Academy of Medicine in December, 1886, and now report four cases of human beings greatly improved by the treatment; they also report rabbits inoculated with tuberculous matter as favorably influenced by picric acid fumes. The writers promise further investigations.

EXTIRPATION OF THE SPLEEN.—At the recent congress of Russian medical practitioners, DR. A. G. PODREZ, private-docent in Kharkuff, read a paper on extirpation of the spleen, including the notes of a case in which he himself had recently performed this operation. The patient was a woman with ague-cake, associated with ascites and extreme cachexia. The operation was performed on the 22d of November last; the patient subsequently went on well, being able to get up on December 10th. The weight increased, and the ascites disappeared. On the 16th, however, she had a rigor, and the urine contained a large quantity of albumen and hyaline casts. Death occurred on the 27th, and was due, as shown by the necropsy, to diffuse parenchymatous nephritis. The total number of cases of extirpation of the spleen collected by Dr. Podrez (including his own) is 42. Of these one was performed in 1549 by Saccharelli, and one in 1711. The rest all belong to the present century. If his own case is reckoned as a recovery, the mortality is 73 per cent.; if otherwise, the mortality is 76; the recoveries being 12 or 11 out of the 42 cases, according as this is or is not reckoned as belonging to that category. The cause of the 11 deaths was septicæmia in one case, peritonitis in one case, and hemorrhage either during or shortly after the operation in all the others. Dr. Podrez thinks that an improved method of performing the operation is required, in order to obviate the tendency to hemorrhage. It is also to be desired that, by means of further observations, the indications for the operation in cases of enlarged spleen associated with both ague and leukæmia may be defined. —*Indian Medical Gazette*, No. 3.

HYPODERMATIC PURGATION.—DR. GEORGE DALTON HAYS, in an article in the *New York Medical Journal* of May 21, 1887, reports his observations on the use of purgatives hypodermatically as follows:

Various substances have been vaunted by different observers as being efficacious when introduced in this way. The most noted is sulphate of magnesium, which Luton stated, from experiments on himself and on his patients, provoked diarrhœic stools when administered in injections of ten centigrammes. It has not proved equally successful in the hands of others. I have lately been making some experiments upon my own person with colocynthin, the glucoside of colocynth. I have employed it hypodermatically in one-third grain doses, dissolved in water, and combined with one grain of cocaine. Without this latter the injection is painful. In the course of three or four hours it has produced several diarrhœic stools. My experiments have not been sufficiently numerous, as yet, to enable me to draw any wide conclusions. The value, in some conditions of the body, of a drug which will produce prompt and thorough catharsis when introduced hypodermatically, is evident.

DR. PEACAN'S TREATMENT OF CHOLERA.—DR. L. PEACAN, of Buenos Ayres, warmly recommends a plan which he has for many years past pursued with much success in the management of cholera. When a typical case with vomiting and diarrhœa comes before him, he immediately applies a cautery behind the right ear over the condyle of the lower jaw, with the object of stimulating the pneumogastric, and thus paralyzing the action of the sympathetic on the abdomen. He then administers six centigrammes (six-sevenths of a grain) of calomel, which dose is repeated every five hours. Half an hour after taking the first of these powders a mixture is commenced consisting of phosphoric acid, carbolic acid, tincture of opium, tincture of ginger, chloric ether, and mint-water, which is supposed to arrest vomiting and diarrhœa, to allay thirst, and to calm spasm—being, indeed, he states, sufficient to cure mild cases by itself. When the cramps are severe, ten drops of Battley's sedative solution of opium are added; and when there is marked prostration of the nervous system, tincture of coca. If the diarrhœa continues, three grammes (forty-six grains) of glycerole of tannin are given in coffee three or four times a day, and forty centigrammes (six grains) of Dover's powder for three or four nights in succession. The patients are allowed to have as much sulphuric acid lemonade as they care for. In addition to internal medication, warm frictions and sinapisms are applied, especially over the epigastrium. —*Lancet*, May 14, 1887.

DIET FOR THE NEUROTIC.—DR. DANA, of New York, recommends the following in the *Journal of Reconstructives* for April, 1887:

In persons of a sensitive and irritable nervous system, those who are classed popularly as "nervous," neurasthenic, or hysterical, the same rules as to a nitrogenous diet, plus as much fat as can be digested, apply. There is a class of nervous persons who, of themselves, find that they cannot take anything sweet without producing headaches, rheumatic pains, and dyspeptic symptoms. These persons should live on meats, fish, with plenty of butter, oysters, cream and milk with soda-water, the yolk of egg with sherry. Beef-tea with the white of an egg, or some peptonoids forms a very nutritious dish. It has been the canon of medicine for many years that animal food must be the soul of the neurotic's diet.

Most nervous persons find, in addition, that green vegetables, like spinach, agree very well with them. Stale bread can be taken twice a day freely, plenty of butter being used upon it. The dietetic breads from which the starch has been removed are sometimes useful, but are, as a rule, unpalatable, and soon cause disgust.

When a rigid diet is to be laid down, there is no better list for nervous invalids than the following:

Beef, and its preparations.
Mutton and lamb.
Fowl.
Fish, boiled or broiled.
Oysters.
Milk.
Butter.
Egg, raw or soft-boiled.
Graham bread and gluten bread.
Spinach.
Stewed fruits, slightly alkalinized.

Nervous patients, especially hysterical patients, should not use alcohol at all. Tea and coffee can be taken in very moderate amounts. The various mineral waters may be used with impunity, but none of them have much effect in relieving nervousness, or curing the nervous temperament.

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SATURDAY, JUNE 11, 1887.

INTESTINAL ANTISEPSIS.

THE subject of self-infection with products formed in the digestive tract has been studied with increasing interest since Selmi, in 1872, discovered in the results of cadaveric putrefaction, and even in fresh tissues, in flour, bread, etc., certain substances closely resembling the vegetable alkaloids, to which he gave the name of *ptomaines*. Gautier, Tanret, Brieger, Brouardel, Bouchard, Dujardin-Beaumetz, and others, have continued these investigations, and the opinion is growing that certain grave cardiac, respiratory, and cerebro-spinal disturbances, hitherto known as typhoid or adynamic conditions, are due to the absorption of these toxic materials from the intestinal tract.

Under normal circumstances these substances are formed chiefly in the large intestine, but owing to their small amount and their ready elimination by the kidneys and liver, their absorption is harmless. In conditions of disease, however, owing to defective or vitiated secretions, the contents of the digestive tube undergo abnormal processes of fermentation and putrefaction, and toxic alkaloids are developed to an extraordinary extent. For example, if the gastric juice be deficient, and, therefore, its well-known antiseptic action with reference to albuminoid substances diminished, the microörganisms introduced in large quantities with food and drink may find a medium suited to their growth, and give rise in the stomach to fermentations which, continuing in the intestine, will produce an abnormal amount of poisonous products, such as leucin, tyrosin, ptomaines, phenol, indol, skatol, etc. The same reasoning applies to the biliary secretion, of which the amount, and consequently the antiseptic properties, are diminished in all febrile affections.

The intestine having been proved to be a species of laboratory in which are formed virulent poisons capable of aggravating, or, as some hold, even of originating disease, the idea of arresting or limiting the formation of such substances is one that naturally arises. This question is ably treated by MARTINI, in an article on thymol as an intestinal disinfectant, in the *Annali Universali di Medicina e Chirurgia*, for February, 1887. In an interesting summary of the work done in this direction, Martini claims that Semmola, who twenty years ago employed the alkaline and earthy sulphites with the object of destroying toxic and pyogenic substances in the intestine, was the first to introduce a treatment based upon the idea of intestinal antisepsis. In recent times a large number of substances have been employed for this purpose, and in the article quoted their merits and demerits are discussed. Antiseptic enemata have disappointed the expectations naturally raised concerning them, because the most efficacious germicides are too irritating to be thus employed. Powdered charcoal, iodoform, creasote, magnesium benzoate, sulpho-carbonated water, naphthalin, etc., have been given *per os*, with more or less benefit, to arrest or control abnormal processes of fermentation and putrefaction in the digestive tract. Each of these drugs has a more or less enthusiastic advocate. For example, Dujardin-Beaumetz speaks of sulpho-carbonated water as a "heroic remedy" in dilatation of the stomach with putrid dyspepsia, and Goetze, who gave naphthalin in doses of seventy-five to one hundred grains a day to thirty-five cases of typhoid fever, claims that it aborted the disease in seventeen.

Martini, in the article quoted, reports a number of cases in which he employed thymol in doses of from 20 to 120 grains per diem, the usual dose being from 30 to 60 grains. He claims that thymol is of value in chronic intestinal catarrh not associated with grave lesions of the intestinal wall, and in the diarrhœa of cachectic and marasmatic individuals; that in chronic dysentery with profuse diarrhœa complicated with intestinal ulceration, it sometimes reduces the number of discharges, which still remain liquid, but at others it is perfectly useless; that it is, however, of service in acute dysentery; that it is indicated in the diarrhœa of pulmonary tuberculosis, not yet arrived at the last stage; that it is of decided value in diarrhœa caused by the ingestion of an undue amount of food, or of food that is indigestible *per se*, or of altered quality; and that, finally, it is efficacious in summer diarrhœa, and in the diarrhœa of dentition.

Observations as to the antipyretic effect of thymol demonstrate that it does not lower the temperature of

healthy subjects, or of those affected with non-febrile diseases. In febrile disorders not complicated with gastro-intestinal disturbances, its action is uncertain, sometimes producing slight and transient reductions of temperature, at others having no effect whatever. In febrile processes accompanied with gastro-intestinal disturbance, for example, in typhoid fever, it is of decided antipyretic value.

That thymol exerts its beneficial action by disinfecting the intestinal contents, is proved by its great insolubility, and by the fact that, during its administration, phenol disappears from the urine. This substance, one of the most constant products of intestinal putrefaction, is eliminated, for the most part, by the urine, where it is found even in health, and experimental therapeutists regard its amount in that fluid as a test of the effect of an intestinal antiseptic.

THE VALUE OF ANTIPYRETICS.

AT the meeting of the Association of American Physicians held at Washington last week, there was a most interesting discussion upon the value of antipyretics, an abstract of which appears in another column. The speakers represented the professional opinion of a wide area of the Union. DR. H. C. WOOD, who led the discussion, spoke almost solely on the action of antipyretics from an experimental standpoint, while the paper of DR. MINOT, of Boston, viewed the matter from its clinical side.

Dr. Wood reminded his hearers that there are two classes of antipyretics, viz., those which reduce bodily temperature by lowering arterial pressure, thereby increasing heat dissipation, and those which, acting in some as yet unknown manner, prevent the production of heat. The first of these are, in reality, false antipyretics, the second, true antipyretics; for the first only aid in dissipating heat already formed, while the second class prevent its formation, and thereby do away with the tissue waste which plays so important a part in lessening the vitality of the sick man. To the false antipyretics belong aconite, veratrum viride, and similar cardiac depressants, while antipyrin, antifebrin, and perhaps quinine, belong to the second class.

The paper of Dr. Minot dealt particularly with the use of antipyrin and thallin in typhoid fever, and the conclusion arrived at by this observer, and the speakers who followed him, was that antipyrin is in all probability more preferable in every case, notwithstanding its larger dose and cost. The discussion, however, soon passed beyond the necessarily limited remarks of the speakers named, and most interesting reports of the varying experiences of the members were brought forward.

Notwithstanding the comparative youthfulness of antifebrin, it was surprising to hear how generally it had been used and how satisfactory the results obtained from its use had been; the whole tone of the discussion being decidedly in favor of its employment in preference to any other drug of the class. Antipyrin occupied a second place, while but few favorable remarks were made in support of thallin.

Among other collateral questions which arose, the one regarding the comparative value of the cold bath and antipyretic drugs was of great interest, and the fact that the cold bath acts not merely by abstracting heat, but by preventing its development, was well brought out. The opinion of most of the speakers was that while both means of reducing fever are useful, neither one can supplant the other, and that in some cases antipyretics perform all that is to be desired, while in others nothing but the cold bath will accomplish the purpose.

No discussion was held as to the relative value of antipyretics other than those named, no mention being made of them except to deny their usefulness. The cold water treatment first introduced by Brandt did not receive favorable notice, although none of the speakers seemed to have used this method.

DETECTION AND TREATMENT OF MORPHIA-TAKING.

THE physcian who has been worried and deceived by the lying and cheating of the confirmed morphiomaniac or opium-eater will be grateful for any help toward the diagnosis of this disease, which does not depend upon the morbid imagination or the torpid conscience of the patient. DR. OSCAR JENNINGS, of Paris, has earned some of this gratitude by following his previous studies of morphinomania with one on its diagnosis and treatment. He suggests first the examination of the urine for morphia or opium salts. The reagents he uses are (1) the double iodide of mercury and potassium (HgCl 13.546, KI 49.80, H_2O to a quart). This gives a yellowish-white precipitate with the alkaloids. (2) The iodized iodide of potash (I 10, KI 20, H_2O 500), the precipitate from which, in the presence of morphia salts, is brown or yellowish. If the quantity be too small to discover by one of these reagents, boil the urine to a third, treat with tartaric acid, then dissolve the tartrate of morphia thus formed with amylic alcohol; decompose the salt with ammonia, and if morphia be present the solution should show a blue color on adding the perchloride of iron. A slightly less troublesome proceeding will detect meconic acid and prove the taking of opium: evaporate, wash with alcohol and boiling water, neutralize with magnesium carbonate, and treat, after filtration, with solution of iron perchloride. A blood-red color is characteristic of meconic acid.

Still further, Dr. Jennings says that the most marked objective symptom of deprivation of morphia in the confirmed habitué is enfeeblement of the heart's action, and this is shown by the peculiar sphygmographic tracing. It differs from the normal in presenting a truncated apex in place of a pointed one, due probably to a capillary obstruction to the movement of the blood. The tracings given show, too, a lessened amplitude of beat—while those taken five minutes after the injection of the customary dose have increased in amplitude, have lost the "plateau" at their joint, and seem entirely normal. From this Dr. Jennings deduces the necessity of using, in the treatment of such cases, a circulatory stimulant of some kind to replace the withdrawn morphia; of such medicines he has found nitroglycerine to produce the same improvement of the pulse as morphia, and patients taking it declare the sensation of warmth and comfort following its use is like that which they experience on first receiving morphia after deprivation of it. Valerian, bicarbonate of soda, a hammock instead of a bed, faradization, dry friction, and the Turkish bath are his other weapons.

The whole study is an interesting one, and especially suggestive to life-insurance examiners, who occasionally suffer from inability to get truthful answers on the subject of the opium-habit.

PICRIC ACID IN FUNGOUS ENDOMETRITIS.

CHÉRON, in the *Revue Médico Chirurgicale des Maladies des Femmes* for May 25th, strongly recommends a uterine injection of picric acid in cases of fungous endometritis. The curette is first used, so that the uterine cavity is freed from the exuberant growth of mucous tissue. This operation leaves a bleeding surface with many open lymphatics and capillaries, and it is necessary thoroughly to cleanse it, in order to prevent the retention of blood in the uterine cavity, and the reproduction of the fungous growths, which is very liable to occur if there be prolonged suppuration.

A most valuable agent for these purposes is found in picric acid, which promotes the prompt healing of the wounded surface. It should be used in solution, the strength being one drachm of the acid to a pint and a half of warm water; the solution should be injected by means of Bozeman's catheter, every day, or once in two days. Picric acid is both antiseptic and analgesic, and on account of these properties is especially suitable for use in cases of fungous endometritis after thorough curetting.

M. TRÉPANT, of Amiens, has called attention in the *Revue de Thérapeutique* for May 1, 1887, to a mode of inducing anæsthesia devised by him, which has, apparently, succeeded perfectly. The method consists in giving every five minutes a spoonful of the following mixture, until all is taken: Syrup of morphine (French Codex) ʒiv; chloral hydrate 46 grains. Allowing twenty minutes for the absorption of this medicament from the stomach, chloroform is then given by inhalation in the usual way. The patient quickly passes into the anæsthetic condition, without excitement, and without nausea and vomiting, and the time of the insensibility is prolonged without further use of chloroform, of which but a small quantity is required to produce entire insensibility at first.

It is obvious that M. Trépant's method is only a modification of that known for several years as "mixed anæsthesia," and it is probably not more efficient than the latter, whilst it may be more dangerous.

No satisfactory theories have yet been presented explaining the origin of fibroid tumors of the uterus, or of cystic tumors of the ovaries. But GALIPPE and LANDOUZY, in the *Gazette des Hôpitaux*, have recently suggested that the agents in the production of these growths are microbes. They have discovered in two cases of fibromyomata of the uterus, and in a like number of cystic ovarian tumors, microorganisms which, they suggest, act as irritants, causing proliferation of tissue. They sustain this hypothesis by analogous facts derived both from animal and vegetable pathology.

Whether this view will be confirmed by accumulation of similar proofs remains to be seen, and until then it can only be regarded as a possible hypothesis.

AT the recent meeting of the Sixteenth Congress of German Surgeons, the proceedings of which may be found in the *Wiener med. Presse*, No. 18, 1887, RYDYGIER recorded three cases of resection of the pylorus. In one, practised for ulcer, the patient was doing well at the end of three years; in the second, done for carcinoma, the patient died in two years and a half; while in the third, performed likewise for carcinoma, the woman was in the best of health at the expiration of six years, and had borne two children. This last case is the only one out of upward of one hundred operations in which a cure has resulted.

WE are informed that Dr. J. Ohage, of St. Paul, on May 29th, performed Cæsarean section by Sänger's method, on a rachitic dwarf, 3 feet 10½ inches high. The mother unfortunately was attacked by acute sepsis and died on the fifth day, from diphtheritic endometritis. The child weighs seven pounds, and was doing well at the last report.

WE regret to announce the death, on May 15th, of typhoid pneumonia, at the age of 50 years, of DR. JOHN FULTON, of Toronto, who, for seventeen years ably filled the editorial chair of our esteemed contemporary *The Canada Lancet*.

SOCIETY PROCEEDINGS.

THE ASSOCIATION OF AMERICAN PHYSICIANS.

Second Annual Meeting, held at Washington, June 2 and 3, 1887.

THURSDAY, JUNE 2D.—MORNING SESSION.

The meeting was called to order at 10 o'clock by THE PRESIDENT, S. WEIR MITCHELL, M.D., of Philadelphia. He referred briefly to the purposes of the Association as being purely scientific, and said that neither ethical questions nor medical politics had a place in its work. He referred to the great desirability of making the meeting of the Congress of American Physicians and Surgeons, to be called in the autumn of 1888, a success, and in conclusion he reported the death of three members, Dr. Thomas F. Rochester, of Buffalo; Dr. Thomas A. McBride, of New York; and Dr. E. D. Hudson, Jr., of New York.

DR. R. PALMER HOWARD, of Montreal, read a paper which was entitled

CIRRHOSIS OF THE LIVER IN CHILDREN.

He reported two cases in which cirrhosis of the liver was present in children, brother and sister, and he exhibited sections of the organs.

DR. WILLIAM H. WELCH, of Baltimore, reported a case of cirrhosis in a child twelve years of age, who had come from the coast of Africa and suffered with malaria. Both liver and spleen were deeply pigmented. The clinical features of the case could not be obtained. Most of the cases of cirrhosis of the liver of malarial origin have been reported from the coast of Africa. Very little has been brought forward in this country with regard to the malarial origin of cirrhosis.

DR. F. FORCHHEIMER, of Cincinnati, had seen two cases that might possibly be called cirrhosis. One was that of a child of eight years. At the post-mortem the characteristic hobnail liver was found. In this case he considered the cirrhosis due to syphilis. The second case is now under observation in the Children's Hospital of Cincinnati, the patient being in the last stage of cirrhosis. In this case there is a history of syphilis and the child has hereditary syphilis of the nervous system. To his mind it was clear that syphilis is the most common cause of cirrhosis of the liver in children.

DR. WILLIAM PEPPER, of Philadelphia, reported a case in which cirrhosis of the liver followed measles in a child eight years of age. There was no syphilitic history. During the attack of measles, there were symptoms of hepatic disorder, as shown by occasional attacks of catarrhal jaundice. Subsequently the symptoms of developing cirrhosis made their appearance and death in a comatose condition finally occurred. The whole duration of the case could not have been less than a year. At the autopsy a typical hobnail liver was found. The liver had been much enlarged, but it gradually contracted so that at the time of death it was about the normal size.

DR. JOHN GUITÉRAS, of Charleston, read a paper on

OBSTRUCTIVE SAFETY VALVE ACTION IN THE HEART, AND DIRECT FUNCTIONAL MURMURS.

In a previous paper on malignant endocarditis he said he had referred to the significance of mitral direct presystolic murmurs, which were proven by the autopsy to be unconnected with any lesion of the mitral orifice. The lesions were those of intense aortic regurgitation. He had attributed the murmurs to the recoil of blood upon the mitral leaflets holding them tense against the stream of blood coming from the auricle. In the opinion of the late Dr. Flint, direct functional mitral murmurs were limited to a smaller number of cases of aortic regurgitation, but the author thought that functional mitral murmurs were not so rare. Obstructive functional murmurs are common in aortic regurgitation.

Pulmonary systolic murmurs are more frequent than any other form of cardiac murmurs. In examining one hundred consecutive cases, he had found in sixty-two, systolic pulmonary artery murmurs. In these the murmurs were present during tranquil breathing or during respiration in such a way as to produce changes in the pulmonary circulation. If account is taken of the bruits heard in this region the proportion becomes greater. The clearness with which these murmurs are heard depends upon the proximity of the artery, the thinness of the chest walls, the nature of the surroundings, and, finally, the proximity of the main trunks to the capillary distribution. Systolic pulmonary murmurs can be developed in the majority of healthy individuals, if we exclude those with thick chest walls and those who are not intelligent enough to modify their breathing as directed. He held that such a murmur is a dynamic obstructive valvular murmur, and is produced by the effect of changes of blood-pressure upon the semilunar valves. A certain degree of pressure in the artery must tend to prevent the opening of the valve. This causes a slanting position of the valves and a narrowing of the orifice with the production of a sonorous whirl.

The fact that such murmurs are not more frequently developed at the aortic orifice is due to the greater power of the ventricle and the wider distribution of the systemic circulation. There are, however, cases in which increased arterial tension is expressed not only by accentuation of the aortic second sound, but by an aortic systolic murmur. He had heard it in atheroma and in Bright's disease where there was no marked anæmia. Pulmonary artery murmurs as heard in ordinary breathing are confined to the expiratory act and are loudest at the beginning of the act. The murmur is sometimes only heard with the first beat that occurs with expiration. In order to develop further this murmur, it is only necessary to arrest respiration. It is better to stop breathing during expiration, especially at the end of normal expiration. A full expiration makes the murmur louder. At the end of inspiration, it is more difficult to develop the murmur for several reasons, 1, because it requires entire arrest of respiration to produce engorgement of the main trunk, 2, because prolonged inspiratory effort is accompanied by a continued hum of the intercostal muscles, 3, because the expansion of the lung interferes with the transmission of any murmur that may be present. A slight murmur is frequently heard in inspiration if the arrest of breathing is pushed far enough. The speaker asked, Are we not justified in assuming that there is a safety valve action in this attitude of the pulmonary valve, which, together with the leakage at the tricuspid orifice, tends to prevent engorgement of the lungs by retardation of

the flow of blood in the systemic veins, so that continued for a time it does no harm?

In reference to the murmurs of anæmia, he thought that they were due to some disturbance of the valvular apparatus. In this condition there is a marked reduction in the quantity of blood. The valves require a certain amount of expansion of the vessels, in order to allow them to apply themselves to the walls. Venous hums and basic murmurs he thought to be of valvular origin.

DR. A. L. LOOMIS, of New York, said that many different explanations of murmurs within the heart cavities had been given. We should recognize that they are due to many different causes. Many are obstructive in character, while others are due to the impinging of currents of blood upon each other in the heart. They are also due to the force with which the blood current is carried from the heart into the vessels. They are also due or greatly intensified by the condition of the blood. He thought that they may also be due to irregular action of the heart produced by nervous conditions. The obstructive mitral murmurs referred to are of frequent occurrence in connection with aortic disease, where there are dilatation and feebleness of heart power, but on autopsy he had always found such changes in the mitral valves as seemed to him to account satisfactorily for the murmur heard.

He had heard the murmurs so readily produced during respiration, but where these murmurs have been persistent, he had always found conditions of anæmia and failure of the right heart. It seemed to him that the explanation is either hæmic or failure of heart power. As we study the cases more we shall find that they are due not so much to changes in the valvular orifices as to changes in the heart cavity, and in the heart walls. Murmurs have come to be of very little pathological significance to him, unless there are other changes associated with them. The worst cases of heart disease that he had met with have had the simplest and least distinct heart murmurs.

DR. E. T. BRUEN, of Philadelphia, stated that in a case of anæmia which he had recently studied, the blood corpuscles were reduced from the normal and there was a great reduction in the hæmoglobin. There was also great relaxation of the vascular system; so much so that as the arm hung out of the bed, there was a venous pulse at the back of the wrist. This was attributed by Dr. Osler and himself to relaxation of the capillary vessels to such an extent as to permit the systolic impulse of the left ventricle to force the blood through the capillaries into the veins. There was no venous pulse in the neck. In this case there were murmurs at each of the valves of the heart. As the anæmia improved and the crasis of the blood was restored, the venous pulse disappeared and the murmurs gradually lessened and the man has now no murmur whatever. This case is corroborative of the view of the author, that in anæmia the murmurs are due to some functional disturbance of the valve.

DR. F. P. KINNICUTT, of New York, said that it has been claimed by certain observers, that pulmonary systolic murmurs are transmitted from the mitral valve into the auricular appendage. The condition required that this may occur is said to be dilatation of the appendage, causing it to approach the chest wall. In some anatomical examinations made a few years ago, he had found that in the normal condition the auricular appendage was concealed beneath the pulmonary artery, and when fully dilated its tip only could be seen beyond the edge of the artery. It was even then one and a half inches from the internal surface of the chest.

DR. F. C. SHATTUCK, of Boston, remarked that when auscultation was first introduced all cardiac murmurs were considered of bad omen. It was then discovered that many systolic murmurs were practically of no importance. We are now finding out that all diastolic murmurs are not of evil import and that they may be transitory and functional. A murmur by itself is next to nothing; there must be something beside the murmur to make it of much importance.

DR. SAMUEL C. CHEW, of Baltimore, with reference to the diagnosis between aortic regurgitant and mitral direct murmurs, said that the diagnosis can usually be made by attention to the following points: An aortic diastolic murmur, although it may be intense at the apex, becomes manifestly louder as we reach the right side of the sternum in the second intercostal space. It will then occupy the whole diastole. If the murmur is mitral in origin it generally will be presystolic, and will be also heard in the scapular region. The aortic murmur is not apt to be heard in the latter situation.

DR. BEVERLY ROBINSON, of New York, had found occasionally in acute strain of the heart, not necessarily brought about by great muscular exertion, murmurs which unquestionably had nothing to do with organic changes in the heart, and cannot be explained as due to any special modification in the blood. The murmurs seemed to be due to more or less acute dilatation or obstruction of the mitral orifices. If these murmurs do not receive careful attention and proper treatment they may continue for a considerable length of time and then become of more or less grave import.

DR. I. T. DANA, of Portland, had had under his observation two sisters, one forty years of age, and the other thirty-three. The mother died of organic heart disease. Both of these sisters have had a mitral regurgitant murmur. In the older sister the murmur, after remaining for five or six years, disappeared. It remained absent for one or two years and then returned, and has continued for the past two or three years. In the second case, the murmur after having been present for five or six years, disappeared and has since remained absent. He asked if it were possible that a murmur connected with organic heart disease should disappear with improvement of the health and reappear when the health again fails.

DR. HOSMER A. JOHNSON, of Chicago, then read a paper on

PNEUMATIC DIFFERENTIATION.

He had compared the results obtained by the cabinet with those obtained by the Waldenburg apparatus, and he held that the former accomplished no more than the latter. The pneumatic cabinet he considered cumbersome and expensive, with nothing to commend it especially in the treatment of pulmonary diseases.

DR. JOHN S. BILLINGS, U. S. A., then read a paper on

METHODS OF LITERARY RESEARCH.

He referred to the best way of using libraries, with especial reference to medical literary work. He also

spoke of the great importance of carefully prepared catalogues of books.

AFTERNOON SESSION.

DR. H. C. WOOD, of Philadelphia, opened a discussion on

THE ANTIPYRETIC TREATMENT OF FEVER.

In order to make the matter as brief as possible, he had prepared certain propositions which he would state, and then give what he thought to be the proof of their correctness. The *first* proposition was, "Fever is a disturbance of calorification in which, through the influence of the nervous system, heat dissipation and heat production are both affected. If there be a fever which is produced by the direct action of a poison, independently of the nervous system, we have at present no proof of its existence."

If an animal's temperature rises, there must be a certain number of heat units used in producing that rise. If the temperature falls, there must be a corresponding lessened production of heat. In his experiments the agent used to produce the fever has been the pyogenic principle found in ordinary commercial pepsin. After the substance has been introduced the animal is put into a calorimeter. The animals used in the experiments have been dogs. In the normal animal, heat production and heat dissipation are correlated functions. When the poison is injected it is found that heat dissipation increases at the time that heat production is diminishing, so that the fall of temperature was in part the result of heat dissipation and in part the result of diminished heat production. It is impossible that there should be this wide disturbance of these two functions simultaneously, unless the poison which produces the fever acted upon some one central organ, and that must be the nervous system. McCallister, of London, while believing that fever is often produced through the nervous system, thinks that at times it may be produced by widespread tissue change caused directly by the poison, his reasoning being that in the advanced stage of fever the temperature is higher than at the beginning. He says that the time when the poison is at its maximum does not correspond to the time when the fever is at its maximum. The objection to this argument is that we do not know that the poison of the disease is the direct cause of the fever. The poison which causes the disease in scarlet fever, etc., is probably not the poison which causes the fever. The latter is probably generated in the system.

Second. "Heat production is regulated by a nervous apparatus, our knowledge of which is still imperfect. There is certainly an inhibitory centre which depresses or controls the production of heat. It probably does this by acting upon the trophic cells of the gray matter of the spinal cord. It is possible also that there is a centre which, when excited, increases tissue change, but its existence has not yet been proven." The speaker then gave a *résumé* of the experiments which he had performed which, in his opinion, proved the truth of the above proposition.

Third. "Heat dissipation is regulated through the vasomotor system, so that vasomotor paralysis is followed by an enormous loss of animal heat, and under unfavorable circumstances by death from cold." If section of the cord is made in such a way as to get vasomotor paralysis without destruction of the respiratory centres, the heat dissipation rises enormously. If the animal is kept in a temperature of 50° or 60°, it dies in a few hours of progressive loss of heat. If kept in a warm chamber, it lives for days. The cause of the rapid heat dissipation is the opening of the bloodvessels of the surface of the body.

When these remarks are applied to a study of antipyretics, it is seen that drugs may lower bodily temperature in health or in fever by increasing heat dissipation. In this way act all agencies which cause vasomotor paralysis. Antipyretics acting in this way may be called false antipyretics. Then it is conceivable that there may be drugs which act on heat production through the inhibitory nerve apparatus, of which mention has been made. Such drugs may for convenience be called true antipyretics. Aconite, veratrum viride, and drugs of that class belong to the false antipyretics. Whether or not there are any true antipyretics has until recently been a question which we have been unable to answer. With regard to antipyrin, certain experiments made in the University of Pennsylvania seem to give some positive results. Care must be exercised in these experiments not to confound a normal defervescence with the action of the drug administered. In the dog the use of antipyrin diminishes both heat production and heat dissipation, the former being diminished more than the latter. It is probable that heat production is primarily affected. The question arises whether this result be due to an effect on the circulation. He has found that antipyrin has no effect upon the circulation. The blood pressure was uninfluenced by its administration. He therefore concluded that the action of antipyrin upon the bodily heat was entirely independent of any action upon the circulation, and the probabilities are, of course, that it acts through the nervous system. Beyond this our present knowledge does not extend.

DR. FRANCIS MINOT, of Boston, then presented some remarks on

THE TREATMENT OF TYPHOID FEVER BY ANTIPYRIN AND THALLIN,

based on the observation of twenty-four cases treated in the Massachusetts General Hospital, the object of the study being to ascertain the proper dose of the drugs, their general and specific effects upon the patients, the results from their continued use as compared with those from their occasional employment, any unfavorable results, and the general effect of antipyrin and thallin upon the course of the disease.

The following conclusions were reached: 1. Both antipyrin and thallin have a remarkable power of reducing the temperature in typhoid fever. 2. In no case was the use of these refrigerants apparently followed by any unfavorable effect upon the course of the disease. 3. The general condition of the patient was more confortable after taking antipyrin and thallin, which were often followed by sleep. 4. The refrigerant medication by antipyrin and thallin appears to have no specific or decided effect upon the course or issue of typhoid fever. It often contributes much to the patient's comfort, perhaps indirectly promotes his safety. 5. The effect of antipyrin and thallin in promptly lowering the temperature, shows that the danger in typhoid

fever does not consist in high temperature alone, and that the latter is rather an index of the violence of the abnormal condition which we call fever, though perhaps adding somewhat to the danger. 6. By the internal use of antipyrin and thallin, all the effects which are claimed for the treatment of typhoid fever by the cold bath are readily obtained without the trouble and inconvenience of the latter method, and without exposing the patient to the dangers of exhaustion and shock consequent on the fatigue of removal from bed. 7. These remedies may be given without danger to the youngest patients in suitable doses; and, indeed, their beneficial effects are more decided and the unfavorable consequences are less observable than with adults.

DR. ATKINSON, of Baltimore, said that so far as the temperature reducing power of these agents is concerned, there can be no question that we are coming more and more to realize that elevation of temperature is far from being all there is in pyrexia. As regards the relative merits of thallin, antipyrin, and antifebrin, the tendency to chilling after the use of thallin is decidedly greater than after the use of antipyrin, while the latter is more apt to produce nausea and vomiting. He was disposed to disagree with the statement that the use of these drugs can take the place of the external application of cold water. It has recently been reported that one observer abroad had treated two hundred cases in private practice by the use of baths with a mortality of nothing, in army hospitals he has had a mortality of five per cent., and in ordinary hospital practice a mortality of less than eight per cent. Although with antipyretics we can reduce the temperature at pleasure, yet the duration of the case is not lessened, and in some cases it has been thought to be prolonged.

DR. WOOD remarked that we must not look upon the use of cold water as acting merely by the abstraction of heat. Its action is more than this. It probably exerts some influence through the superficial nerves.

DR. GEORGE L. PEABODY, of New York, had found that a certain proportion of cases which does not bear the cold bath will bear the use of antipyretic drugs, while on the other hand, the bath may be used in a certain number of cases in which antipyretics cannot be applied. From clinical experience he was convinced of the truth of the statement of Dr. Wood, that the cold bath accomplishes more than the simple reduction of temperature. Its soothing effect upon the nervous system is greater than that accomplished by the reduction of temperature by antipyretic drugs. He believed that in many instances the course of the disease is favorably modified by the use of the cold bath. Another important matter is that since the introduction of these methods of antipyresis, the number of relapses seems to be greater and more fatal. He differed from Dr. Wood on the point that antipyrin acts solely by diminishing heat production, and that it does not increase heat dissipation. It seemed to him that the increase of heat irradiation from the surface is very great, not only where it produces sweating, but also where it does not.

DR. W. H. WELCH, of Baltimore, said that it was a question how far rise in temperature is an important element in fever, and an element which calls for interference on the part of the physician. There is comparatively little evidence that the grave symptoms of fever are referable to the elevation of temperature. There is no doubt that temperatures of 110° to 113° produce serious symptoms, but whether or not ordinary temperatures of 105° to 107° exert any serious action on the body, is a question which is certainly unsettled. It has been shown that rabbits can be kept in a box with a continuous rectal temperature of 107° for at least two weeks, provided the precaution is taken to keep the box well ventilated and the animals supplied with moist food. Patients may have a perfectly clear brain and no grave symptoms, with a temperature of 106° or 107°. On the other hand, there are severe and fatal cases of typhoid fever in which the temperature has never registered a great height. While in most cases there is a certain proportion between the height of the temperature and the severity of the disease, yet there are certain cases in which this proportion does not exist.

DR. WILLIAM PEPPER, of Philadelphia, had been disposed from his experience, to think that antipyrin and antifebrin are superior to thallin. Between the two former he had not noticed any marked difference. He had used both largely in a variety of cases and had not seen any of the dangerous symptoms which have been mentioned by some writers. The action of these drugs seems to be purely through the nervous system. He had seen no effect upon the circulation, upon the respiration, or upon the secretions, save that of the skin. Some of his observations have been of interest with reference to the relative value of the external use of cold water and the internal use of antipyretics. In the sudden acute pneumonias of children with a temperature of 106° or 107°, with initial convulsions, where the prompt and repeated use of cold baths has been without gratifying results, full doses of either of these antipyretics have produced a remarkably successful effect. In a recent case in a child with double croupous pneumonia involving two-thirds of the left lung and one-third of the right lung, with a temperature in the rectum of 107°, and with repeated convulsions, cold baths failed to relieve the symptoms, although repeated at intervals of three hours. Antipyrin in repeated doses controlled the pyrexia at the beginning and on several occasions during the course of the disease, and after a severe struggle the child recovered. As to the ability of these agents to replace cold baths under all circumstances the evidence is not adequate. In the sudden hyperpyrexia occurring in the course of rheumatism he was not prepared to accept the view that these drugs are capable of replacing the cold bath. In these cases we have direct evidence that the high temperature is the direct cause of the symptoms, at least of the severe nervous symptoms. He was not one of those who consider high temperature in itself a dangerous symptom. There is no proof that high temperature, provided that it has not induced secondary changes, should be regarded other than as one symptom of the disease. He had had many patients with typhoid fever with a temperature of from 103° to 105°, who had done perfectly well without any measures directed to the reduction of the fever. We, however, meet with cases in which these temperatures are attended with certain symptoms for which there is apparently no other cause. In such cases we must consider that the hyperpyrexia calls for treatment. He had noticed the effect, to which attention has been called,

that is, the deep and tranquil sleep which follows the administration of these antipyretics.

DR. GEORGE C. SHATTUCK, of Boston, had used both antipyrin and antifebrin largely, and he thought that antifebrin offered all the advantages of antipyrin without its disadvantages. It has none of the disadvantages which belong to thallin. Three or four grains of antifebrin accomplish the same results as are produced by a larger dose of the other drugs. The disagreeable symptoms which some writers have referred to as following antipyrin are probably due to the fact that they follow the original recommendation and give 30 grains of the drug. The same benefit can often be obtained from 15 grains and often from 7 grains. With reference to the point suggested by Dr. Welch, he said that whether pyrexia is or is not a dangerous feature of the disease, we find clinically that where a patient has high fever, is irritable, impatient, and uncomfortable, the administration of one of these antipyretics, or the external use of cold water, produces a tranquil and refreshing sleep, and the patient awakes in a condition much better to continue the struggle with the disease.

DR. J. C. WILSON, of Philadelphia, agreed with other speakers that antifebrin has many advantages over thallin, particularly in its cheapness and in the smallness of the dose. A recent observation which he had made is interesting as bearing on the question of heat dissipation. He had been treating a case of typhoid fever in which, from time to time, antifebrin in five grain doses was given. These were repeated whenever the temperature reached 104° F. This caused copious sweating, with the usual reduction of temperature, amounting to three and a half or four degrees. On the last occasion one ninety-sixth of a grain of sulphate of atropia was given with the antifebrin. No sweating occurred and the temperature was reduced only one and one-half degrees.

DR. JAMES T. WHITTAKER, of Cincinnati, differed from the gentlemen who seem to accept the view that fever is a neurosis. He thought that there is no proof that the nerve centres are distinctly irritated, and we have no proof that the agents which reduce fever act directly on the nervous centres. Is it not more probable, he asked, that the antipyretic action is really an antimicrobic action? We have some observations which go to show that the disease is caused by bacteria, or if not directly by bacteria by some of their products, the ptomaines. Would it not be more rational to study the habits of these bacteria and address ourselves rather to the removal of the cause than to the counteracting of the effects?

DR. H. M. LYMAN, of Chicago, said that with regard to antifebrin and antipyrin his experience has been that of previous speakers, and his preference is for the former drug. He was disposed to regard their great value as proceeding not so much from their power to reduce temperature as from their general effect, especially upon the nervous system. He regards them as valuable adjuvants in the treatment of disease, largely from their hypnotic and tranquillizing effect upon the nervous system, to which allusion had already been made. He has observed that in many instances where, in abrupt febrile affections, relief has not been secured from antifebrin and antipyrin this failure is frequently due to the presence of the condition we call rheumatic, and there salicylic acid gives the relief that we fail to get with the antipyretics.

DR. JOHN GUITÉRAS, of Charleston, had some experience with these drugs in the treatment of the continued fevers of warm climates, but here the results have been rather negative and have showed the advantage of stopping their use after they have been continued for a certain length of time. He had been called in consultation where the drug had been continued for ten or fifteen days, each time that it was given producing a certain reduction of the temperature but having no permanent benefit, and the patients have begun to improve so soon as the drug was stopped. It has seemed that when given continuously in this way these antipyretics have an effect on the vasomotor system. The pulse is weak and dicrotic and he considers it advisable to give digitalis. The effect of cold-water baths in these continued fevers of the South seems more beneficial. If continued for two or three days they often favorably modify the course of the disease.

DR. PEABODY, of New York, said with reference to the point suggested by Dr. Whittaker, that there was no question in his mind that a considerable proportion of cases of typhoid fever can be aborted by antiseptic treatment of the intestinal ulcers with naphthaline or resorcine. For the past two years he has treated all cases coming under observation during the first ten days of the disease with a calomel purge (ten grains), followed by naphthaline in such doses that at least seventy or eighty grains are taken during the twenty-four hours. Under this treatment he had without doubt succeeded in aborting many cases in which the symptoms were quite pronounced. He has not succeeded in cases coming under observation at the end of the second week.

DR. H. C. WOOD, with regard to the dissipation of heat by sweating, stated that in the dog, on which the experiments were made, there are but few sweat glands; there are a few in the paws and about the mouth, so that there could be no heat dissipation from this cause. Sweating in man does undoubtedly cause a dissipation of heat. With reference to the possible influence of antipyrin on fever, through some action on the bacteria causing the fever, he said that in the experiments to which he had referred no microbes were concerned in the production of the fever, which was induced by the pyogenic principle of pepsin.

DR. JAMES TYSON, of Philadelphia, reported a recent case of rheumatism in which the temperature suddenly went up to 105°, with alarming brain symptoms. Antifebrin in five grain doses failed to produce any effect. The patient was then put into a cold bath, and the temperature of the water gradually reduced to 72°. The discomfort experienced by the patient then prompted his removal from the bath. The thermometer in the rectum showed a reduction of only one-half of a degree, but within the course of half an hour the temperature fell three degrees. He scarcely thought that this was a natural defervescence, but must attribute it to the effect of the bath. The fall in temperature was followed by a disappearance of all the symptoms, and the recovery of the patient. While he had never seen any serious results from the use of thallin and antipyrin, yet there have been symptoms which caused much alarm to the attendants. He had not seen such symptoms follow the use of antifebrin.

DR. R. P. HOWARD emphasized the fact that internal antipyretics and the cold bath are not equivalents, they are substitutes and important auxiliaries to the physician. These measures relieve special symptoms, but whether or not they shorten the duration of the disease, is a question not yet settled. Another important point is with reference to relapse in typhoid fever. This is a subject which requires investigation. He thought that every relapse, so-called, is due to the absorption of fresh poison. It is really a fresh attack, an initial attack which runs a severe course, and often proves fatal.

(To be continued.)

AMERICAN CLIMATOLOGICAL ASSOCIATION.

Fourth Annual Meeting, held at Baltimore, May 31 and June 1, 1887.

TUESDAY, MAY 31ST—AFTERNOON SESSION.

The Society was called to order by THE PRESIDENT, DR. FRANK DONALDSON, SR., of Baltimore, who delivered an address on the

PROPHYLACTIC TREATMENT OF THOSE WHO INHERIT A PREDISPOSITION TO PHTHISIS.

DR. B. F. WESTBROOK, of Brooklyn, said that, according to the results of certain observations, the anatomical and physiological conditions which predispose to this trouble are a disproportion between the size of the heart and the lungs; the heart being smaller in proportion to the size of the lungs than in ordinary individuals, and a disproportionately small digestive apparatus. The former condition interferes with the circulation at the apices, while the latter condition causes a lack of nutrition.

DR. JAMES R. LEAMING, of New York, read a paper on

THE PHILOSOPHY OF CLIMATIC TREATMENT OF DISEASES OF THE CHEST.

It is observed that the greatest improvement takes place during the first three weeks of the patient's stay at a new place. He suggested that a line of resorts be established along the Atlantic seacoast. The patient could begin in the summer at the most northern, and gradually pass southward, making a stay of a few weeks at each place. Having completed the series, the patient may return, taking the stopping-places in a reverse order. This same plan might be applied to the Pacific coast and to the mountains. He also suggested the propriety of State and municipal authorities furnishing sanitariums for the benefit of those unable to avail themselves of the advantages of existing institutions.

DR. R. G. CURTIN, of Philadelphia, then read a paper on

THE INFLUENCE OF SEA AIR ON SYPHILITIC PHTHISIS.

The histories of five cases of what appeared to be syphilitic phthisis were given, in which improvement followed prolonged sea voyages, and in each case the symptoms returned when the patient again took up his residence on land. He was not prepared to say why it was that the sea air proved beneficial in these cases, while in most of the ordinary cases of phthisis residence on the sea-coast was not desirable.

DR. E. T. BRUEN, of Philadelphia, referred to the desirability of having correct views with regard to the influence of sea air on pulmonary affections. It is probable that in syphilitic phthisis the benefit of the sea air is due to its influence on the catarrhal processes. In catarrhal affections of the mucous membranes in general it seemed to him that residence at the seashore is useful. On the other hand, in tubercular phthisis, the influence of sea air has been disastrous. He was led to make these remarks from the fact that so many patients with phthisis are recommended to reside at the seashore or to take an ocean voyage. He had found that those cases benefited by prolonged sea voyages are those in which there is no inherited tendency to tubercle.

DR. V. Y. BOWDITCH, of Boston, would make a great distinction in speaking of sea-coast air and the pure sea air. Cases which could not stand the harsh cold and changeable air of the seacoast, may be benefited by a sea voyage or residence on an island some distance from the shore, where the conditions are similar to those which obtain in a sea voyage.

DR. F. I. KNIGHT, of Boston, said that while he agreed with the general feeling that the coast climate is not suitable for cases of phthisis, yet in several instances he had known patients to improve and gain in weight during a stay at some of the coldest resorts on the New England coast.

DR. J. C. WILSON, of Philadelphia, said that in his experience there are three classes of patients with consumption who cannot go to our exposed Atlantic seacoast without risk. These are, first, those in whom there is active febrile disturbance; secondly, those of a highly excitable and nervous organization; and thirdly, those who suffer from repeated attacks of spitting of blood. Such persons cannot safely reside for any length of time on the Atlantic seacoast.

DR. F. C. SHATTUCK, of Boston, said that the author had referred to syphilitic phthisis, that is to say, a destructive process in the lung not due to tubercle, but to the syphilitic virus. It seemed to him to be a difficult matter to determine whether or not there is such an affection. Tubercular phthisis varies so much in its symptoms that the points mentioned could not be relied on. It seemed to him that the criterion would be the presence or absence of the tubercle bacillus. The author referred to Dr. Porter as having examined the sputa from one hundred cases of supposed syphilitic phthisis without finding the bacillus. That number is so large for the short time this test has been available, that it should make us a little doubtful of the methods employed. The fact that the bacillus is not found, is no proof that it is not present. The German Committee on the Collective Investigation of Disease, studied this matter last year, and came to the conclusion that so-called syphilitic phthisis had no real existence. Both syphilis and tuberculosis are common diseases, and the one offers no immunity from the other, so that we should expect to find them frequently combined in the same individual.

DR. J. H. MUSSER, of Philadelphia, had never seen a case of phthisis which he considered of syphilitic origin. In his experience in the post-mortem room he had seen only one case in which the lesions bore any resemblance to what we should expect to find in syphilitic phthisis. This was the case of a young man with syphilis and cirrhosis of the liver, due to syphilitic interstitial hepatitis. There were also syphilitic gummata in the brain,

and the patient died of syphilitic meningitis. There were scattered through both lungs, innumerable miliary granules not at all resembling miliary tubercles. These were solid bodies made up of a yellow core, which was moderately firm, and surrounded by a ring which made up at least one-half of the nodule. The microscopical examination showed these bodies to consist of a ring of firm fibrous connective tissue, in the centre of which there were degenerating cells. He was unable to find the bacillus of phthisis, but, as had already been stated, the failure to find it, is no proof of its absence. He would not call this a case of syphilitic phthisis, but rather a case of syphilis of the lungs.

DR. E. FLETCHER INGALLS, of Chicago, had been much interested in the remarks of Dr. Shattuck, but he apprehended that most of the members had seen cases in which the syphilitic nature of the disease admitted of no question. Even if the bacilli were found, it would be no proof that the case had not originated as a syphilitic trouble, and that it had not subsequently become tubercular. He recalled one case in which the syphilitic manifestations were very prominent. There was consolidation of the lungs, particularly of the middle portion of one lung. There was a history of syphilis and distinct cutaneous lesion. The patient had been in Colorado, and returned much worse. On his return to a lower altitude, he was put on the use of iodide of potassium, and ultimately apparently recovered.

DR. J. H. MUSSER, of Philadelphia, then presented a paper on

THE TREATMENT OF THE FINAL STAGE OF PHTHISIS.

He gave a detailed account of the symptoms met with in the last stages of phthisis, and referred to the various measures which he had found useful in these cases. To relieve the high temperature, he had resorted to antifebrin with advantage. Quinine was found to act unsatisfactorily.

THE PRESIDENT announced as

THE NOMINATING COMMITTEE,

Drs. F. C. Shattuck, E. T. Bruen, Willis E. Ford, B. F. Westbrook, and W. H. Geddings.

(To be continued.)

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, June 2, 1887.

THE PRESIDENT, A. JACOBI, M.D., IN THE CHAIR.

DR. F. HUBER read a paper entitled

INTUBATION: A STUDY OF FORTY-SEVEN CASES.

As a result of his experience and observation he said that he would never advise tracheotomy only in cases in which intubation fails to afford the necessary relief. In his opinion, such a case would in the future be a rare exception. After stating that the dyspnœa is as effectively relieved by intubation as by tracheotomy, he proceeded to speak of the advantages of the former, and also referred to the origin of the procedure as proposed and practised by Bouchut in 1858. Then having referred to some practical points, derived from his personal experience, he stated that intubation had now passed through the experimental stage, and that its utility had been fully established by numerous operators in New York, Philadelphia, Chicago, and other places. Notwithstanding the gratifying results obtained, however, it had as yet received very little favor or even attention in Europe.

Of his 47 cases Dr. Huber said, 29 cases, with 11 recoveries, were in children under three years of age, and 18 cases, with 9 recoveries, in children of three years or over. Of the 11 children under three years, one was 9½ months old, one 10½ months, two 11 months, one 1 year, two 2 years, two 2½ years, and two 2 years and 8 months old. Of all the children that he had been called upon to treat who were suffering from laryngeal stenosis he had found it necessary to resort to intubation in only one out of every three or four; and he thought that it should not be employed until dangerous symptoms had supervened. He used it, in fact, in exactly the same class of cases in which he would have performed tracheotomy one year ago. Having spoken of the diagnosis of croup and the indications for surgical interference, he referred to the importance of making a careful examination of the neck and chest. He had known cases in which the dyspnœa caused by retro-pharyngeal abscess and by empyema had been supposed to be due to laryngeal stenosis. As confirmatory of the diagnosis of the latter, relative absence of pain, in uncomplicated cases, is of much value; and aphonia, with difficulty of both inspiration and expiration, is positively indicative of croup.

He then went on to speak of the various accidents and mishaps that had been met with in intubation, and the objections raised against the procedure. He referred first to the gag, and said that O'Dwyer's gag is liable to be displaced by the struggles of the child, but this is not the case with the one devised by Dr. Denhart, which he exhibited. The thread attached to the tube should be eighteen or twenty inches in length, and if not withdrawn at once, should be passed over the ear and secured. In order to avoid accidents in introducing the tube the efforts to place it in position should be short and repeated, rather than kept up uninterruptedly for any length of time. One of the most serious accidents that could occur is the pushing of dislodged membranes before the tube; and in a case of this kind Dr. Ferguson, of Troy, was obliged to resort to tracheotomy. Several deaths had been reported from this cause, and Dr. Waxham had recently devised a long tracheal forceps for the purpose of removing the membranes when this accident occurs. In a case of his own in which it happened, he gave the child brandy, with the effect of exciting a fit of coughing, which expelled both the tube and the membranes.

If at any time after the tube is introduced noisy breathing should come on, it is an indication for its temporary removal. The tube has been known to be coughed up and then swallowed. Instances have also been reported in which the tube has slipped through the larynx into the trachea; but this was when the earlier pattern of tube, with small head, was employed. The tube does not act as a foreign body when in the larynx, giving rise to choking sensations and coughing; but if it remains in position for a considerable length of time it may perhaps produce slight ulceration. This, however, does no harm.

Speaking of accidents in connection with the with-

drawal of the tube, he said that instances had been reported in which it was pushed down into the trachea, but this had only occurred when the older pattern of tube, with small head, was employed. As to the time for removing the tube, in favorable cases, this might be done as early as the fourth or fifth day, although it is often desirable to allow it to remain longer. As a rule, however, it can be dispensed with at a much earlier date than the tracheotomy tube. If the respiration continue free the tube should generally be allowed to remain until the fifth or sixth day. If the respiration becomes noisy, however, it should be promptly removed, and afterward introduced again, if this should prove necessary. When there are diphtheritic patches discernible in the nose or pharynx it is advisable, as a rule, to leave the tube in position until they have disappeared.

In intubation, as in tracheotomy, the prognosis is more favorable when there is simple local obstruction in the larynx than in cases where there is marked constitutional infection from diphtheritic poison. No age offers a contra-indication to intubation. No positive prognosis should ever be made, however, until forty-eight hours have passed from the time the tube was introduced.

As regards medicinal treatment, Dr. Huber said that it was his practice to keep up the use of bichloride of mercury throughout the course of the disease, whether intubation was resorted to or not. He employed it, in accordance with the views of Dr. Jacobi, in doses larger than those usually recommended; giving from one-sixth to half a grain, and in some cases as much as one grain, in divided doses, during the twenty-four hours, even in children a year old. Where there was much difficulty in swallowing he gave it in the form of tablet triturate, of one-fortieth of a grain each, mixed with sugar and placed dry upon the tongue. If there were extensive diphtheritic membranes in the fauces he also employed tincture of iron and chlorate of potassium. In threatened heart-failure, he resorted to brandy, caffeine, etc. If the temperature was very high he employed antipyretics, either by the mouth or rectum. Finally, he used the steam atomizer for producing a moist vapor.

Intubation, he went on to say, possesses every advantage afforded by tracheotomy. It would also save many cases in which tracheotomy would not be permitted, as well as many which would die if the latter were performed, especially in cases in children under three years of age. Out of twelve cases in which Dr. Huber had resorted to tracheotomy, ten had proved fatal. He had also seen many cases in the hands of others in which the results were no more favorable: so that he felt warranted in contending for the superior advantages of intubation.

DR. J. O'DWYER then read a paper on

FEEDING AFTER INTUBATION OF THE LARYNX,

and exhibited tubes modified to overcome difficulty in feeding. He also showed specimens with the tube in position, and a section of the cricoid cartilage filled up with membranes, except where the tube had left an opening, the form of which was just the shape of the latter. The difficulty in swallowing, he said, was recognized by all as the most important objection to intubation, and he had long been trying various modifications in the shape of the tube in order to diminish this as much as possible. At first he tried making the heads of the tubes quite small; but, while this rendered it possible for them to slip through into the trachea, it did not render deglutition any easier.

The next modification that he made was to increase the size of the head to some extent and give the tube a greater curvature in order to avoid ulceration at the base of the epiglottis. The third modification was to make the posterior surface of the tube larger than the anterior, so as to allow the epiglottis to pass over it more completely. Next he increased the size of the head still further, so that it should fill the cavity of the larynx and prevent fluid and other foreign substances from entering around it. The fifth modification was to make the upper surface of the tube concave, so that it would adapt itself more completely to the conformation of the parts; and this modification had the effect of rendering it very easy to remove the tube. Up to the present time extraction had always proved the most difficult part of the procedure.

The last modification which he had adopted was to give to the upper portion of the tube a double backward curve, with the hope of increasing the facility of swallowing, and this, at all events, had the effect of preventing ulceration of the anterior wall of the trachea, which hitherto had been sometimes quite extensive. Any one, however, who practised intubation at all largely would find it advisable to employ a variety of tubes according to the circumstances of particular cases, and he had devised a large, short tube for temporary use in certain instances. The string could be left attached to it, and he thought it probable, on account of the large calibre of the tube, that membranes might sometimes be coughed up through it.

Notwithstanding all his modifications, Dr. O'Dwyer said that he still found about the same difficulty in swallowing present. Solids and semi-solids, as a rule, are taken much better than fluids. Food will not enter the tube if the epiglottis is normal. In a number of instances he had removed the tube in order to give nourishment, but the results were no better than when it was in position. In some cases, particularly when nephritis was present, there were nausea and vomiting, as well as anorexia. Sometimes, however, swallowing was more readily accomplished than before the insertion of the tube, on account of the relief which it afforded to the urgent dyspnœa. As a rule, the longer the tube remained in position, the easier it became to swallow. When the patient was old enough to understand he always gave instructions that drinking should be done rapidly, and that as large a quantity of fluid as possible should be taken at one time. Then, by coughing the tube could be freed from any of it that might by chance have entered. Sometimes he employed rectal alimentation, but he very seldom had to resort to the stomach-tube.

Passing on to speak of pneumonia, Dr. O'Dwyer said that, in his opinion, this might arise (1) from the presence of secretions in the lower air-passages; (2) an excess of blood drawn out of the lungs; (3) atelectasis in the severe cases in which there was an extension of the membranes; (4) the presence of a tube either in the larynx or trachea. He did not believe that food is a cause of pneumonia, as there is no evidence that food

had ever been found in the minute bronchi. He had known a patient, an adult female, to wear a tube in the larynx for more than ten months, who not only did not take pneumonia, but who in the meanwhile recovered from bronchitis, which she had at the time the tube was put in.

He had lately devised two hard-rubber tubes for all kinds of acute stenosis of the larynx in adults; the smaller being for women and young males, and the larger for full-sized males. The principal difference between these and the metallic tubes was in regard to their weight and the size of the calibre. While a rubber tube weighed only one hundred grains, a metallic tube of the same size weighed one ounce and three-quarters, and the rubber tube was fully double the calibre of the metallic. As regards the comparative comfort of the two kinds of tubes, one patient found the metallic tube the most satisfactory, while another, who was a syphilitic and had a very sensitive larynx, preferred the rubber. In the latter case the metallic tube produced ulceration, which was not the case with the rubber one, while greater freedom of movement and facility of expectoration were also experienced with the latter.

DR. DILLON BROWN read a paper on

STATISTICAL RECORDS OF INTUBATION.

He said that there had been reported, so far as he had been able to collect them, 760 cases, by fifty-four different operators, and of these he had tabulated 502 cases. 211, or 27.07 per cent., had recovered. The average age of the children who died was 3 years and 2 months, and of those who recovered, 4 years and 1 month. In those who recovered intubation was resorted to at an average period of 2 days and 9 hours after symptoms of laryngeal stenosis had first appeared, and in those who died, at an average period of 1 day and 19 hours. In the fatal cases the average time after intubation at which death occurred was 2 days and 8 hours, and in those which recovered the average time during which the tube was worn was 5 days and 3½ hours. In 339 fatal cases the causes of death were given. Those who had performed intubation in the greatest number of cases were as follows: O'Dwyer, 78 cases; Waxham, 106 cases; Dillon Brown, 84 cases; and Huber, 47 cases.

Unavoidable accidents, Dr. Brown went on to say, were rare, and, with the exception of the one of pushing the membranes before the tube, were not important. From the use of too much force false passages had been made in two instances. The slipping of the tube down into the trachea, which had been reported in several cases, could never occur if a tube of proper size were employed. In two cases the tube had been passed into the œsophagus, instead of the larynx; but there is no reason why this mistake should happen if suitable care was taken. In order to avoid the possibility of pushing membranes before the tube, as far as practicable, it should be pressed well down and held firmly in position with the finger until the obturator had been removed. Coughing up of the tube is a source of danger, but this can, as a rule, be avoided if a tube with a sufficient retaining swell is used. If there is paralysis of the muscles, however, the accident is liable to occur, notwithstanding the sufficient retaining swell. As to the causes of death after intubation, the extension of the membranes to the bronchi is the most frequent, and he believed that pneumonia, when present, was secondary in character.

DR. W. P. NORTHRUP read a paper on the

PATHOLOGICAL ANATOMY OF THE RESPIRATORY TRACT AFTER DEATH FROM LARYNGEAL DIPHTHERIA AND INTUBATION.

In the paper on this subject, which he read before the Academy in December last, he said he had reported 87 fatal cases. Since that time 20 additional fatal cases had occurred at the Foundling Asylum; so that he had now altogether 107 cases on record. The cause for this large number during so short a period as four months was the occurrence of diphtheria in connection with a fatal epidemic of measles and scarlet fever. The severity of the outbreak was shown by the fact that all the fatal cases had pneumonia, and thirteen of them nephritis. In his former paper he stated that he had never met with ulcers of the trachea, but in the twenty cases, now reported for the first time, there were deep ulcers, laying bare the rings of the trachea, in no less than five instances. (The specimens from these cases were presented.) He had not as yet met with ulceration of any consequence caused by the head of the tube —nothing more, in fact, than necrosis of the epithelium. He had never seen any indication of aspiration-pneumonia, as it was called, due to the entrance of milk or other fluid into the finer bronchi.

DR. IRWIN H. HANCE reported a

CASE OF LARYNGOTOMY AFTER INTUBATION

which occurred at the Nursery and Child's Hospital, and the patient, who was twenty months old, and suffering from scarlet fever and diphtheria, twice coughed up the tube. After it had been introduced the third time the tube became obstructed and had to be removed. At this time the child was so exhausted that artificial respiration was resorted to for a while. The tube was then inserted for the fourth time, and again it filled up with mucus and had to be removed. After being introduced a fifth time, it again became obstructed, and was finally coughed up. The stenosis still continuing, laryngotomy was performed, at the crico-thyroid membrane, and complete relief from the dyspnœa was at once afforded. The child died of the scarlatinous trouble the next day.

In this case, he said, the tubes were thoroughly tried, and were found to be utterly valueless. Their failure, he thought, was probably due either to the large quantity of tenacious mucus present or to the dislodgement of diphtheritic membrane. It was a question whether tracheotomy should not have been resorted to earlier, before the child had become so exhausted by the condition present and the repeated introduction of the tube.

In conclusion, Dr. Hance alluded to other cases in which laryngotomy or tracheotomy had to be performed after a trial of intubation. Nine of these cases had been reported, including his own, in which there were three deaths and five recoveries, while in one instance the child was still under treatment at the time the report was made. The operation had been performed or advised under the following circumstances:

1. Irritability of the larynx.

2. When membranes were pushed down before the tube.

3. In plugging up of the tube with dislodged membrane.

4. When there is a return of the dyspnœa with absence of the tube from the larynx.

5. When the tube becomes wedged in the larynx.

As to the laryngeal spasm, he had found that this could usually be combated with belladonna, nitre, and chloral. Practically, the only condition calling for tracheotomy was the obstruction of the tube by membranes, and this was a very rare occurrence. The attempt had been made to remove the membranes with the forceps. Finally, he said that he would advise resorting to tracheotomy only after intubation had failed.

DR. O'DWYER, in reply to a question by the President, stated that in his later cases he had resorted to tracheotomy in only one instance after intubation. He had met with such bad results in his own experience with this operation that he was not disposed to hope for much from it. As to removing membranes with the forceps, the subglottic division of the tube is of such narrow calibre that it is practically impossible to use this instrument in it, and he had, therefore, devised a flexible apparatus somewhat on the principle of the umbrella probang for this purpose. He knew of no wedging in the larynx that could occur except such as is sometimes met with when a tube with a small head is used. Like Dr. Northrup, he had never seen any evidence of the so-called aspiration-pneumonia arising from the entrance of food into the bronchi. The secretions, he believed, are the source of the pneumonia that is found after intubation, there being aspiration of these into the finer bronchial tubes. It is due primarily, however, to the presence of the tube, because the latter impairs the patient's power of expulsion; the secretions, under these circumstances, not being gotten rid of with the same ease as through the normal larynx.

THE PRESIDENT said that he was much pleased to hear from Drs. O'Dwyer and Northrup that they had never seen any reason to believe that pneumonia originates from the presence of food. He would like to inquire of Dr. Northrup whether lobar pneumonia is of frequent occurrence, and, if so, whether this is found especially in cases of sepsis.

DR. NORTHRUP replied that in the eighty-seven cases previously reported by him, twenty-seven were believed to have died from extension of the diphtheritic membrane. In a larger proportion of these there were found membranes extending from the tip of the nose to the finest bronchi of the lungs. Bronchial diphtheria, with œdema, was a marked feature at the autopsies. Pneumonia, when it did occur, was of late origin. It affected both lungs, and was lobular, not lobar, in character. In not more than one-fourth of the cases could it be said to have been the cause of death.

DR. CAILLE said that it was too early as yet to speak a final word as to the merits of intubation. Many of the cases published have been reported in such a way as to render them of no practical value. In comparing this procedure with tracheotomy in his own experience, he found that he had performed tracheotomy in twenty-one cases, with five recoveries, and intubation in sixteen cases, with six recoveries. In his cases of intubation diphtheritic membranes were observed on the nares and pharynx in nine instances. Most of them were seen in consultation, and, as a rule, intubation was undertaken rather late. He believed that all would have died without surgical interference, and that one which died would have recovered if intubation had been practised earlier. The cause of death after intubation he had found to be catarrhal pneumonia in a majority of his fatal cases. It was a fact that most of the children who died had taken liquids, and of late he had allowed only solids chopped fine, with ice to allay thirst. Since he had adopted this course his results had been better.

In general, he said, intubation is to be prefered to tracheotomy in the majority of cases. When the pharynx and nares are affected, intubation is, as a rule, preferable to tracheotomy, especially when the after-treatment of the latter cannot be carried out satisfactorily. Tracheotomy is preferable in some cases, hopeless without operation, provided the surgeon can operate and carry out the after-treatment under the most favorable conditions. These statements apply to intubation with the present style of tubes.

NEW YORK SURGICAL SOCIETY.

Stated Meeting, May 25, 1887.

THE VICE-PRESIDENT, LEWIS A. STIMSON, M.D., IN THE CHAIR.

MOTOR AND SENSORY PARALYSIS FOLLOWING FRACTURE OF THE CLAVICLE.

DR. L. A. STIMSON presented a patient, a man, twenty-nine years old, with the following history: April 12, 1887, he fell from a height of about eight feet, striking upon the outer aspect of his left shoulder; he remained unconscious for an hour, and was then able to walk to the Presbyterian Hospital, a distance of about a mile. On examination there was found a simple fracture of the left clavicle at the junction of the outer and middle thirds without displacement, the symptoms being localized pain on pressure and crepitation when the fragments were moved.

But a more singular and striking phenomenon was the condition of the left arm, which hung powerless by the side, and which, on examination, showed extensive sensory and motor paralysis without recognizable injury to its skeleton or soft parts. There was loss or diminution of tactile sensibility over an area beginning a little above the lower margin of the deltoid muscle and covering the posterior surface and external half of the anterior surface of the arm and forearm, the radial half of the hand, the thumb, and index finger.

There was complete motor paralysis of the external scapular muscles, the deltoid, triceps, biceps, coracobrachialis, and brachialis anticus, and the supinator and extensor muscles of the right forearm. The extensors of the middle and terminal phalanges of the fingers (the interossei and lumbricales) were not involved.

The arm could not be actively raised, abducted, or rotated; the elbow could not be flexed or extended, the forearm could not be supinated, and the only movements of the parts below the forearm that were possible were flexion of the wrist and fingers, and extension of

the distal phalanges. The muscles reacted well to the faradic current.

During the six weeks that have elapsed since the accident the paralysis has persisted, and the limb has wasted notably, the wasting including the supra- and infra-spinatus muscles.

The only recorded cases of which I have knowledge in which a fracture of the clavicle has been immediately followed by paralysis of the arm, are those of Earle[1] and Gibson.[2] In the former, a sailor fell from the main yard, broke his left collar-bone and was rendered unconscious for some time; when first seen by Earle, two days later, the arm was found entirely useless and paralyzed. Three weeks later sharp pains were felt, especially at the finger-tips, whenever the limb was moved, and occasionally when it was at rest; there was complete loss of sensation throughout the limb. Improvement followed the use of electricity and blisters. He mentions the gradual recovery of power by the muscles of the scapula and by the pectoralis major.

In Gibson's case the falling branch of a tree caused a comminuted fracture of the collar-bone and bruised the soft parts so severely that violent inflammation followed. The fragments were depressed behind and below the line of the first rib, and the brachial plexus was compressed, in consequence of which complete paralysis and atrophy of the entire limb followed.

In two cases reported by Blassius,[3] in which the patients were first seen one or more years after the accident, fracture at or near the junction of the outer and middle thirds of the clavicle had united with marked angular displacement and approximation of the shoulder to the thorax, and in each the deltoid was atrophied.

A few other cases have been reported in which paralysis of the arm has been observed after an interval, and has been attributed to the pressure of the dressings, especially to that of an axillary pad.

In Gibson's case the attribution of the paralysis to pressure of the depressed fragments upon the brachial plexus may be accepted as probably correct, but in the report of Earle's case there is nothing to show that either fragment was exceptionally displaced, and in this, as also in mine, the implication in the paralysis of the suprascapular nerve, which is given off above the level of the clavicle from the cord formed by the fifth and sixth cervical nerves, seems to be almost a positive proof of some other cause. What that other cause may be is not indicated, so far as I can see, by any symptom that can guide to a choice among the several possible causes which suggest themselves, and a search through the works of a number of authors has not yielded any information. In Weir Mitchell's *Injuries of the Nerves* the only suggestion of the existence of such a class of cases is contained in the following portion of a sentence on p. 99: "Falls on the shoulder or on the hand being competent to cause palsies of the arm, we may expect to meet with the latter even in such cases of dislocation as put out of the question any possible compression of the nerves by the head of the humerus;" but he dismisses the question of pathology and etiology with the phrase that "in the whole it is more in accordance with modern views to see in the atrophy a consequence of nerve lesion, of which rheumatic or scrofulous inflammations of the joint are so apt to furnish examples."

The suggestion contained in the first of these quotations, that certain paralyses observed in connection with dislocation are not due to compression of nerves by the displaced bone, is one that deserves attention in connection with the prognosis and treatment. Nerves that are disabled by pressure promptly regain, as a rule, their power of conducting impulses after the removal of the cause, but those that are due to the unknown conditions assumed to exist in the present and similar cases are sometimes persistent.

DR. BRIDDON asked if there was any reason to think that the patient was unconscious *before* he fell. The reporter replied in the negative.

DR. GERSTER asked if the patient might not have struck the object upon which he fell in such a way as to cause traction on the nerves.

DR. STIMSON replied that the man struck directly upon his neck and shoulder, in the manner described.

DR. GERSTER cited the case of a boy whom he had presented to the Society two or three years before. The patient had been run over and sustained a fracture of the head of the humerus and the neck of the scapula with extensive effusion. There was almost complete paralysis of the limb, but recovery was subsequently perfect.

DR. A. G. GERSTER read a paper entitled

EXSECTION OF THE KNEE-JOINT FOR TUBERCULOSIS.

(See page 650).

After finishing his paper, the author added that he did not believe that any blood was saved in operations on the extremities by bandaging the limb previous to applying the constricting band. By elevating the limb for a few minutes, gravity assisted in depleting the vessels to some extent; then the constriction was applied. The blood left the arteries and collected in the veins. This was of great advantage to the surgeon, because he could, by making pressure on the part with both hands, always locate the vessels in order to apply the ligatures. Only a small amount of blood could escape, as the rest is kept back by atmospheric pressure. The reader objected to the use of Esmarch's bandage, for the following reasons: 1. Amputations and exsections are frequently performed in cases of acute or chronic infectious disease, where the application of the bandage tends to force the septic matter into the general circulation; 2. The avoidance of this danger more than compensates for the extra amount of blood that may be lost.

DR. STIMSON said that his experience in four or five cases had been similar to that of the reader. He had noted a recurrence of the disease in two cases, one that of an adult, the other that of a boy of fifteen; a complete excision was required later. The field of usefulness of the operation must be limited. A special objection to excision in young subjects arises from the consequent arrest of the growth of the limb, and it is important to remember that a cure may sometimes be obtained by immobilization and pressure, without resort to the knife. He cited the case of a child two years of age, whose left knee had presented marked evidences of tuberculous disease. A quantity of pus was aspirated,

[1] Earle: Med.-Chir. Trans., vol. 7, p. 175, 1816.

[2] Gibson: Princ. of Surg., 6th ed., vol. 1, p. 271.

[3] Blassius: Quoted by Gurlt, Knochenbrüche, vol. 2, pp. 602–605.

the limb was fixed in a plaster-of-Paris splint, and three weeks later the symptoms were much relieved. A leather splint was then applied and was worn all winter. He saw the child six weeks before and all evidences of disease had disappeared, the joint being freely movable.

DR. GERSTER agreed with the speaker regarding the propriety of expectant treatment in the case of children, as the results are generally much better than when exsection is performed. He would only exsect in cases in which there had been prolonged suppuration, or where orthopædic treatment had been neglected. He had seen a number of cases that had been treated by orthopædic surgeons on the expectant plan, and was surprised at the good results obtained. We cannot be too radical in our treatment of tuberculous joints in adults, as hospital patients are too poor to submit to a long course of orthopædic treatment. By excision a cure is effected in six weeks instead of several months. All the cases reported had shown that it is better not to wait until fistulæ have formed and new complications have arisen.

NEWS ITEMS.

DISTILLED WATER IN EYE LOTIONS.—Physicians and pharmacists generally assume that distilled water is the best means of dissolving or diluting drugs, and in the great majority of cases this is undoubtedly the case. As a rule, the solvent should be absolutely pure and neutral in itself; but in some instances this very neutrality of the solvent may interfere with the intended action of the substance dissolved. A curious illustration of this exception to the rule was given some time ago by an eminent English oculist in a communication to a London journal. Our readers know that an aqueous solution of boracic acid is one of the most useful of eye lotions; but we remember that, as prescribed for the writer several years ago by one of the best oculists in this city, the order was for "ten grains in *distilled water*." Our English expert, however, says he has found that, when the lotion is made of distilled water, its use is attended with some discomfort and smarting; and, what is more singular, the irritation is even greater when there is no boracic acid in solution. "Anybody," he says, "can verify for himself that a drop of distilled water in the eye seems to be a most unpleasant and foreign element."

The simple explanation of this is, that well or spring water contains salts in solution which make it slightly alkaline, thus rendering it somewhat more neutral to the conjunctiva, a tissue ordinarily bathed in the lachrymal secretion, which contains about one per cent. of solids, chiefly chloride of sodium, or common salt. The addition of two grains and a half of this salt to the ounce of distilled water renders any lotion for the eye more soothing and more beneficial. This, our friend says, he has verified by experience; and we commend the fact to the attention of oculists and others interested. —*Popular Science News*, May, 1887.

OHIO STATE MEDICAL SOCIETY.—The forty-second annual meeting will be held at Toledo, Ohio, on June 15, 16, and 17, 1887. The officers of the Society are:

President.—Thomas McEbright, of Akron.

Secretary.—G. A. Collamore, of Toledo.

A TRAINING SCHOOL FOR COLORED NURSES.—The Atlanta University for colored people has established a training school for nurses, which is doing a good work.

NEW ORLEANS POLYCLINIC.—The New Orleans Polyclinic, a school for the special instruction of students and practitioners, has been thoroughly organized. The course will open the first Monday in April, 1888.

PROF. BILLROTH'S CONDITION.—The Vienna correspondent of the *Lancet*, writing on May 22, 1887, describes the distinguished surgeon's condition as follows:

The state of Prof. Billroth, who is suffering from bronchitis capillaris and pneumonia catarrhalis, was very serious on Friday last. There was considerable debility of the heart's action, and a catastrophe was feared; but after inhalations of pure oxygen the patient had rallied by the next day. The bulletin just published is confirming the hope of a speedy recovery of the illustrious surgeon. He felt himself greatly relieved, the appetite was good, and he slept soundly for some hours.

THE ILLNESS OF THE CROWN PRINCE OF GERMANY. —We obtain the following particulars of the Crown Prince's case from the *British Medical Journal* of May 28, 1887:

His Imperial Highness has been suffering from slight hoarseness since the beginning of the year; indeed, some people think that his voice has never been quite clear since his visit to Italy last autumn. He was treated in the ordinary way by Dr. Wegner, his Physician in Ordinary (who is also Surgeon-General of the Garde-du-Corps, and Inspector-General of the Hospitals of the Army), till the month of March, when Professor Gerhardt was consulted. Professor Gerhardt examined the Crown Prince's throat carefully, and found a small growth on the left vocal cord, and used the electrocautery on several occasions with marked benefit and relief to His Imperial Highness. The growth had almost entirely disappeared toward the end of March; and, owing to the Crown Prince's constant occupation with the festivities connected with the birthday of the Emperor William, the treatment was then suspended. As some of the growth still remained, however, the Crown Prince was advised to go to Ems in April, where he took the waters most diligently for some weeks. During his residence there and on his return reports were carefully circulated in the newspapers that His Imperial Highness had benefited considerably, and had almost recovered the former use of his voice. Exactly the contrary was the truth. Some increase of the growth was found to have taken place, and the members of the Royal family in Berlin and London were beginning to feel really anxious. Professor Bergmann was then asked to see His Imperial Highness with Professor Gerhardt, and later on Professor Tobold, of Berlin, the well-known specialist in diseases of the throat, was also called in. These were subsequently joined by Dr. von Lauer, the Emperor's Physician in Ordinary and Chief of the Army Medical Department.

The tendency of the growth to enlarge was then fully established, and it became a question whether the new formation could be removed by the internal method, or whether a more extensive operation was necessary.

Under these circumstances it was thought desirable, before resorting to tracheotomy, to have the advantage of the unique experience of Dr. Morell Mackenzie, who was summoned from London, and arrived in Berlin on Friday afternoon, May 20th. The same evening a consultation was held, and Dr. Mackenzie was asked to remove a portion of the growth with the object of ascertaining its exact nature. The following morning Dr. Mackenzie succeeded, in the presence of Drs. Gerhardt, Tobold, and Wegner, in removing a small portion of the growth, which was immediately handed over to Prof. Virchow for microscopic examination. Prof. Virchow pronounced it not to be of malignant structure, all that was found being the inflammatory products of irritation.

This decided the diagnosis, and the treatment also. It is hoped that it may be possible to remove the base of the growth by forceps or destroy it by cautery.

BALTIMORE ACADEMY OF MEDICINE.—At the last meeting of the Baltimore Academy of Medicine, held May 31, 1887, the following officers were elected:

President.—W. C. Van Bibber, M.D.

Vice-President.—B. B. Browne, M.D.

Secretary.—C. C. Bombaugh, M.D.

A SUCCESSFUL SANGER'S OPERATION.—GUSSEROW reports, in the *Berliner klinische Wochenschrift* of May 16, 1887, a successful case of Sänger's operation in a rachitic pelvis, whose *conjugata vera* was 5.5 cm. (2⅛ inches). The case was complicated by a mild intoxication from corrosive sublimate, but mother and child recovered perfectly from the operation. The child perished on the twenty-sixth day of its life, from gastro-intestinal catarrh.

SCHRÖDER'S MONUMENT.—The Committee appointed to secure a proper memorial to Schröder have decided to place his marble bust in the Frauen Klinik.

TRANSPORTATION OF PATIENTS TO HOSPITALS.—The Berlin authorities have investigated the dangers attending the ordinary methods of transporting the sick, and have ordered the establishment of four stations, to which telegraphic messages may be sent when such conveyance is needed. Penalties are laid upon the transportation of those ill with infectious diseases in open wagons, and a supervision of the transportation and disinfection of such patients and their baggage will be undertaken by the police.

COURSES FOR PRACTISING PHYSICIANS IN BERLIN.—The autumn courses will begin September 26, and last until the end of October. A summer course for practitioners is given at Jena.

LARYNGOLOGY IN BERLIN.—The Medical Faculty are about to create a new Extraordinary Professorship of Laryngology in connection with a Polyclinic for Throat and Nasal Affections, for which room has been taken in a private house in the Luisenstrasse. The first occupant of the chair will probably be Professor Bernhard Fränkel. A series of vacation courses intended for practitioners is being arranged. These are to begin on September 26th, and will continue till the end of October.—*Lancet*, May 21, 1887.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING JUNE 4, 1887.

BRANSFORD, JOHN F., *Surgeon.*—Ordered to the Smithsonian Institution at Washington, D. C.

TRYON, J. RUFUS, *Surgeon.*—Detached from the U. S. S. "Quinnebang," and ordered home.

SIEGFRIED, CHARLES A., *Surgeon.*—Ordered to the U. S. S. "Quinnebang."

MARTIN, WM., *Assistant Surgeon.*—Detached from the U. S. S. "Pinta," and ordered home.

FITTS, HENRY B., *Passed Assistant Surgeon.*—Detached from the Receiving Ship "Vermont," and ordered to the U. S. S. "Pinta."

FIELD, JAMES G., *Assistant Surgeon.*—Ordered to the Receiving Ship "Vermont."

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF MEDICAL OFFICERS OF THE U. S. MARINE HOSPITAL SERVICE, FOR THE TWO WEEKS ENDING JUNE 4, 1887.

GOLDSBOROUGH, C. B., *Surgeon.*—Detailed to represent the service at the meeting of the American Medical Association at Chicago, Ill., June 6, 1887. June 1, 1887.

BANKS, C. E., *Passed Assistant Surgeon.*—When relieved, to rejoin station at Boston, Mass. May 23, 1887.

NORMAN, SEATON, *Assistant Surgeon.*—When relieved, to rejoin station at Cape Charles Quarantine. May 26, 1887.

OFFICIAL LIST OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT U. S. ARMY, FROM MAY 24 TO JUNE 6, 1887.

HUBBARD, V. B., *Major and Surgeon.*—Granted leave of absence for one month, to take effect on or about June 1, 1887.—*S. O. 119, A. G. O.*, May 24, 1887.

BURTON, H. G., *Captain and Assistant Surgeon.*—Granted two months' leave of absence on surgeon's certificate of disability.—*S. O. 107, Division of the Atlantic*, May 25, 1887.

FRYER, B. E., *Major and Surgeon.*—Granted two months' leave on account of sickness; permission to apply for an extension.—*S. O. 28, Division of the Pacific*, May 28, 1887.

BROWN, PAUL R., *Captain and Assistant Surgeon.*—Granted leave of absence for four months.—*S. O. 126, A. G. O.*, June 2, 1887.

PERLY, H. O., *Captain and Assistant Surgeon.*—Relieved from duty at Fort Maginnis, Montana Territory, and ordered for temporary duty at Fort Snelling, Minnesota.—*S. O. 49, Department of Dakota*, May 23, 1887.

APPEL, A. H., *Captain and Assistant Surgeon.*—Granted leave of absence, on surgeon's certificate of disability, six months.—*S. O. 127, A. G. O.*, June 3, 1887.

WOOD, LEONARD, *First Lieutenant and Assistant Surgeon.*—Ordered for temporary duty at Fort Huachuco, Arizona Territory; relieved from duty at Headquarters Department of Arizona.—*S. O. 126, A. G. O.*, June 2, 1887.

SUTER, Wm. N., *First Lieutenant and Assistant Surgeon* (recently appointed).—Ordered for temporary duty at Washington Barracks, D. C.—*S. O. 122, A. O. G.*, May 27, 1887.

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